

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

JULY 1947



Peak Performance—night and day

Keep the milk moving! Keep down the bacteria count! Rush milk to creameries and processors every day in the year! That's where Reo's ability to deliver *sustained peak performance, as measured in power, speed and reliability*, really pays off. And there's another important reason why Reo is popular in the milk industry or wherever a fraction of a cent differential in unit cost may mean profit or loss. This is long life and low operating and maintenance cost, for which Reo has been famous for 43 years. It's all in the way Reos are engineered and built. Ask the nearest dealer, distributor or factory branch about this. REO MOTORS, INC., Lansing 20, Michigan.

**STANDARDIZE
ON
REO**

1904 • AMERICA'S TOUGHEST TRUCK • 1947

YOU, TOO, CAN SAVE MONEY

with a truck like this

Here's a "Job-Rated" truck . . . a truck that FITS the hauling job for which it was built!

It stands to reason that a truck that fits its owner's operating conditions will give better performance, better service to customers, and operate at lower cost.

You, too, can buy a truck that will fit your job . . . save you money!

You can get a "Job-Rated" truck powered with exactly the right one of 7 engines—plus the right gear ratio—to provide the pulling power you need, with the economy you want.

Such a truck will be built with exactly the right clutch, transmission, rear axle—the

right units throughout . . . for "top" performance with your loads over your roads.

You can be so sure of getting a money-saving, long-lasting truck like this, because Dodge builds 175 different "Job-Rated" chassis models.

To make sure that your next truck is a dependable, economical "Job-Rated" truck, see your Dodge dealer . . . because only Dodge builds "Job-Rated" trucks.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you prompt, dependable Dodge truck service; *Third*, by providing you with factory-engineered truck parts that are identical with original Dodge "Job-Rated" truck parts.



ONLY DODGE BUILDS

DODGE
"Job-Rated" TRUCKS

Fit the Job . . . Last Longer !

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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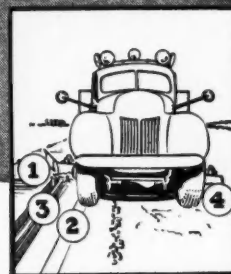
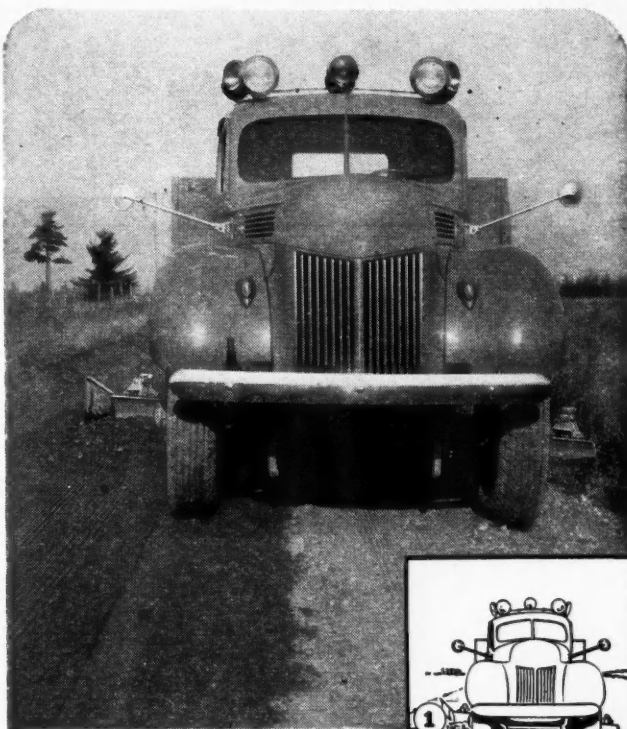
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See that surface?

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St. Paul
HYDRAULIC

TRUCK PATROL at work

Close inspection of this photo reveals these points:
(Refer to numbered diagram)

1. Excellent quality of resurfacing work done by St. Paul Truck Patrol on first pass.
2. The secret of high quality work is in this track left by the patented **LEVELIZERS**—steel shoes which glide behind the cutting blade holding it in an even plane, free from chatter.
3. Tire prints are clear and sharp. No slipping of wheels to wear out tires.
4. Wide blade brings material in from shoulder while wheels stay on firm ground. Your choice of 12' or 14' moldboards. Extensions also available.

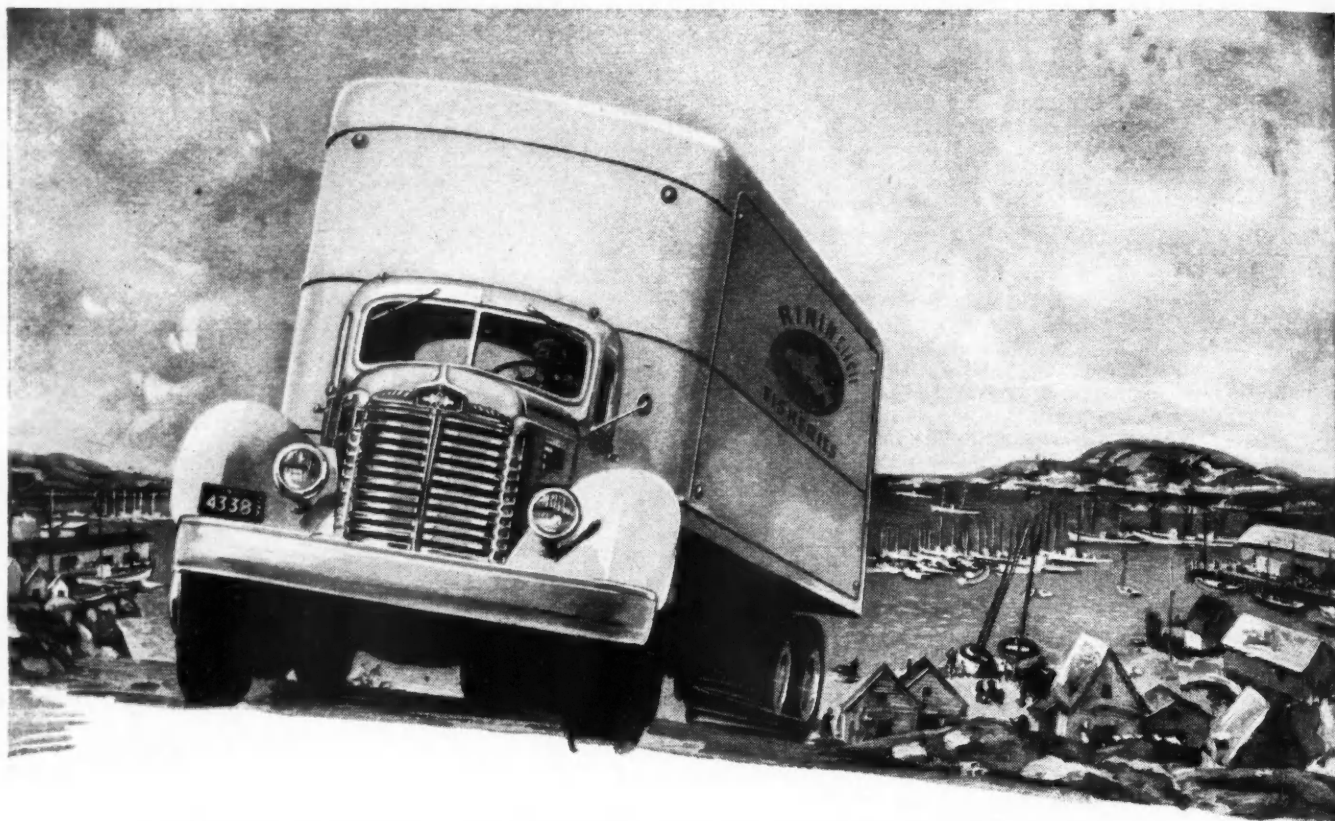
Please write for illustrated circular.

ST. PAUL HYDRAULIC HOIST DIVISION

GAR WOOD INDUSTRIES, INC.

2207 University Avenue S. E.

MINNEAPOLIS 14, MINNESOTA



They Transport "Flesh, Fowl and Good Red Herring"
Yes, IN INTERNATIONAL'S BRILLIANT, NEW
KB LINE IS THE RIGHT TRUCK FOR EVERY JOB

Pictured here is a new International KB Truck Tractor on an inland run from the sea—a fast run so that the seafood can reach its destination with all the sea goodness intact.

Seafood is only one commodity in the truck transport field. But the picture emphasizes how completely the 15 basic models in the new International KB Line serve all factors of highway transport.

Gross vehicle weight ratings of the new International KB Models range from 4,400 to 35,100 pounds. In the 15 models are incorporated many features and improvements. Advanced styling makes them prestige-builders

for their operators on any highway.

Now add this fact: International Engineers are masters at *specializing* trucks to their jobs. And International *specialization* means maximum loads in terms of the conditions under which trucks operate; long, trouble-free service; and low operating and maintenance costs.

So see your International Dealer or Branch promptly about new KB Model Internationals—the finest values in 40 years of International Truck history.

Motor Truck Division

INTERNATIONAL HARVESTER COMPANY
 180 North Michigan Avenue Chicago 1, Illinois



40TH ANNIVERSARY OF INTERNATIONAL TRUCKS—1907-1947—
 Forty Years of International Truck Service to Industry, Commerce and Agriculture.

Tune in James Melton on "Harvest of Stars" Sunday! NBC Network



INTERNATIONAL Trucks

CCJ READER DIGEST



DO YOU KNOW THE ANSWERS?

How can you increase maintenance efficiency through shop departmentalization? See page 34

What can you do to improve your operation through control of dirt in lubricating oil? See page 46

Is a 12.5 to 1 compression ratio engine efficient and practical? Page 43

WILL THESE POINTERS HELP YOU?

Are your mechanics up on common causes and practical cures for transmission troubles? See page 53

Are your operating costs mounting? Plot your depreciation and maintenance costs on graphs. See page . . 64

Do you know what a refrigerated body can and cannot do? See page . . . 92

Dynamometer Tests

by E. J. GAY, H. T. MILLER, Technical Service Dept., Ethly Corp.

AFTER two years of operation at St. Louis, data shows the following: 1. Increase in fuel economy in the order of 8 to 10 per cent. 2. Average number of driver complaints reduced by 12 to 15 per cent. 3. Average reduction of road calls on a unit basis was approximately 20 per cent.

The above results can be affected by one or more of the following factors: quality of personnel, quality of and completeness of maintenance records, outside storage during winter months, level of carburetor maintenance and general mechanical condition of the engine.

The dynamometer does not substitute for good maintenance . . . but it will stimulate a desire to establish good maintenance practices by the evidence it uncovers—herein lies a major value of a chassis dynamometer. See Page 38.

Mobile Records

by ALVIN HILL, President Hill Lines, Inc.

HILL LINES, Inc., is a relatively small common carrier but its 100 vehicles cover 18 terminals. To keep maintenance records immediately available to all concerned a metal box is placed in each cab. It contains the "M" folder which provides a day-to-day case history of all maintenance operations and these three special forms: an *attention sheet*, used by the driver to report needed work; an *incomplete work and check sheet*, used by mechanics to record temporary repairs, and a *major work sheet*, used as a shop order. President Alvin Hill says it's simple and it works. See Page 66.

Time Lag Tests for Air Brakes

by JULIUS GAUSSOIN, Pres. Silver Eagle Co.

HUNDREDS of accurate tests with highly specialized equipment enabled us to study speed, time and distance of stopping characteristics of various tractor trailer combinations averaging 72,000 lb. g.v.w. From these tests we separated, among many other factors, the air-brake reaction time and the braking distance required to stop.

The tests revealed that most relay valves did not have sufficient air capacity, that additional lag when front wheel brakes were operated slowed down the whole brake system and that application time takes precedence over rate of deceleration. Although the deceleration rate of the truck trailer combination was approximately the same as that of a passenger car, time lag delayed the truck stop by as much as 30 ft. from 20 m.p.h.

We found that by making simple modifications in the air system which decreased lag time we could increase the speed of brake application particularly in the trailer and decreasing stop-

ping distance from 20 m.p.h. by as much as 12 ft. These modifications included streamlining of all air lines by the elimination of T's and elbows, use of automatic couplers which eliminated the need of shut-off cocks, and the use of continuous rubber hose all the way from the couplers to the trailer fittings. See Page 40.

Maintenance Clubs

by BART RAWSON, Associate Editor,
Commercial Car Journal

FLEETMEN in various parts of the country are putting the bee on maintenance through the medium of informal maintenance clubs. Two such organizations with widely-divergent methods but similar purposes are set up in New York City and Buffalo.

The New York group, made up exclusively of fleet operators, has few formal speakers, depends upon its own membership to lead monthly round-table discussions on timely subjects. Seeing how the "other fellow" has solved a particular problem or what experience he has had with a new product are listed among primary benefits. The Buffalo group is less exclusive, includes supplier representatives and has a more formal program featuring excellent outside speakers. Its purely educational value ranks higher than other benefits. But both groups share in the important advantage of friendly contacts with other fleetmen. See Page 48.

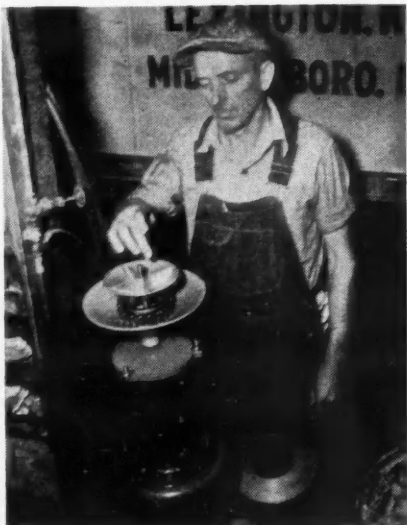
Road Failure Survey, Part 2

Analysis by A. W. GREENE, CCJ, Managing Editor

THIS is the concluding part of Survey No. 2—What Fleet Operators are Doing to Reduce Road Failures—which is part of the Fleet Operators' Experience Handbook series.

Last month this department supplied data on the leading causes of road failures as well as the corrective and preventive measures fleets employ to reduce the number of road calls. This month, additional data is published on the road failure data furnished by COMMERCIAL CAR JOURNAL's Board of Experts. This deals with the methods that the nation's leading fleet operators employ to handle road failures.

One of the many interesting facts gained from this study is that fleet maintenance men exercise close control over their vehicles, wherever they may be and whatever may happen to them. Pertinent data have been tabulated to show the average maximum distance covered by fleet shop personnel to repair a road failure, procedures that fleet drivers follow in the event of a road failure, typical instructions fleet operators give drivers for handling road failures, service facilities fleets use for handling road failures, equipment fleet shops use for handling road service calls, and the types of repairs fleet mechanics make on the road. See Page 49.



1



2



3

Fig. 1. Bearing packer saves time, assures efficiency, has helped to make Huber & Huber bearings run 400,000 miles. Fig. 2. Two-man crew in wheel bearing department checks 300 units every 10,000 miles. Routine includes re-

moval, washing, checking and repacking of trailer units. Fig. 3. Floor-type, motor-operated brake testing machine is prized asset of brake department. Large indicator dials are visible from driver's seat. Fig. 4. Machine shop's No. 1

Job Specialists Up Output . .

**Fleet organizes all phases of maintenance
so that mechanics become specialists.
They work in crews, and crew leader
is responsible for quality and production**

▼ WHEN an experienced truck mechanic asked me for a job in our shop the other day, I asked him why. His answer startled me. I knew we enjoyed good labor relations in all departments—our system of specialization was different and I had designed it to promote speed and efficiency in service and maintenance—but I was somewhat surprised that outside mechanics should consider

our shop a much better place to work.

Here was his answer: "Because I'm sick and tired of starting 10 jobs a day and finishing none. I want a job where I can finish what I start. In the shop where I am now working, I no sooner get a job started than someone pulls me off and puts me on another job. They tell me it's because I know how to do more things. I don't care what it is. I want a job

where I can do a complete job of some kind, so I can take some pride in the completed job and where I may be able to improve my own efficiency."

This prompted the thought that other fleets might be interested in the results of our system of allocating the maintenance work to crews of specialists under the supervision of a crew leader. We have learned that this method eliminates oversights and alibis, pre-fixes responsibility, and makes it easier to get out a large volume of work. Compared with our old system, our output is higher, labor cost is lower, and all employees are better satisfied.

Work Allocated to Crews

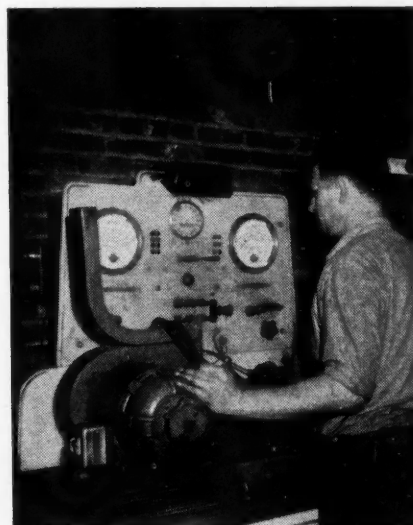
EACH crew consists of two, three or more men under the supervision of a crew leader. The crew



4



5



6

department handles carburetors, fuel pumps and distributors. Equipment includes this tester. Fig. 5. Fleet's own battery rebuild shop says necessary

supplies have been easier to get than new batteries. Fig. 6. The No. 6 department handles electrical equipment repairs. This tester supplies all answers

Improve Quality . . Cut Costs

leader is responsible for all the members of his crew. When he gets in a quandary, he brings the problem to me. Until then he has his work cut out. He and his crew start what they finish, work in the same slot, use the same tools, and work on the same kind of work day after day. They get better, faster, more efficient and more alert to important breaks, wear or changes, in the conditions they find. In fact, they become acknowledged experts.

Wheel-Bearing Crew

WE HAVE a two-man crew, for example, that does nothing but service wheel bearings. They have 300 units to check each 10,000 miles. Dual wheels on trailers are removed, washed out and thoroughly checked. Bearings are washed out and examined, and if found in good shape,

are packed with grease on a grease packer and replaced. This crew works in the same slot each day, it has the same tools, and they are to be found in their accustomed places. Each man knows what he is going to do and what tools he needs. Fumbling and indecision is reduced to the vanishing point. Lost motion is almost non-existent. They do the same units over and over, and they are the first to spot an irregularity.

They take justifiable pride in their work which makes bearings run

thousands and thousands of extra miles. We have many bearings in the fleet that have gone more than 400,000 miles, and are still going on to unknown longevity. Some of them kick out sooner, of course, but I've heard of fleets who threw their wheel bearings away at 100,000 miles, on the theory that they were worn out.

Our wheel bearing crew often does 10 or more units per day. They keep their department clean, their tools in good condition, and like their jobs.

(TURN TO NEXT PAGE, PLEASE)



by **H. L. ZIMMERMAN**

Shop Foreman, Huber & Huber Motor Express, Louisville, Ky.

Job Specialists . . .

(Continued from Page 35)

Special Dismantling Crew

WE HAVE another innovation in our work distribution plan. The men who do rebuilding work on engines or parts do not remove or install parts or engines. We have a separate crew whose duty is to remove and install equipment. They remove engines, transmissions, differentials, heaters, generators, and any other work in that category. They also install the same items.

The result is that they become not only proficient and speedy but they learn many tricks that lead to short cuts. They are familiar with the bolt that is difficult to remove, they know well that there is a removal sequence in many cases that must be followed to prevent taking off the wrong part at the wrong time. Also, they soon learn that some operations can be performed without removing certain parts which were formerly considered necessary.

Here is the point: It isn't that any of our men could not remove an engine from a tractor, if necessary. But no three of them could do it as fast and as easily as the three-man crew that does it all the time. This crew has been clocked time and again. They can remove an engine, install a new one, and have the unit ready to roll in three hours. Practice and familiarity with all the operations, and a well established routine or sequence of operations, is what makes this possible.

This crew removes any part of a unit that needs rebuilding or which can't be serviced satisfactorily in the vehicle. They deliver their parts to the machine shop department and receive new or overhauled and rebuilt units from the parts department. The machine shop department delivers their output of rebuilt units, whether engines or generators, to the parts department.

Tune-up with Dynamometer

WE HAVE a chassis dynamometer. While most of our mechanics can operate this complicated machine,

it belongs to the tune-up department; so the man in charge of the carburetors, fuel pumps and distributors in that department of the machine shop operates it.

There is a method in this also because the tune-up operations indicated by the machine, if the tractor is in generally good condition, will concern the distributor, points, timing, carburetion and proper operation of the fuel pump. All the work he has to do concerns the same things on which he works in the machine shop.

When he is checking a carburetor with the tractor on the dynamometer, he is checking a carburetor that he has rebuilt. He is checking it under load, speed and simulated road conditions. The responsibility is his under both conditions, and there is no room for alibis or buck passing if he were so disposed. There just isn't

★ ★ ★ ★

EVEN MACHINE SHOP IS DEPARTMENTALIZED

THE crew system is employed not only for general maintenance work, but even the machine shop is departmentalized. This is the breakdown of work and responsibility:

No. 1 department takes care of carburetors, fuel pumps, distributors, and chassis dynamometer tests.

No. 2 department handles differentials, transmissions, clutches and water pumps.

No. 3 department covers engine heads, valves and cold welds.

No. 4 department is engine rebuilding.

No. 5 department takes care of battery rebuilding.

No. 6 department handles generators, starters, voltage regulators and heaters.

★ ★ ★ ★



Inexpensive trailer back stop uses 8 x 8 in. timbers. Center area is rock fill. No chocks are needed and no trailers have been dropped

anyone he can blame anything on except himself if he finds the carburetor isn't performing properly when it should.

Take another condition on the dynamometer: The tractor being tested we will say, has everything wrong with it except a new engine. Generator is bad, voltage regulator is bad, starter is bad, driveshaft and differential show bad signs of wear when the unit is tested. Does this carburetor man have to roll up a set of tools and start dismantling the unit and replace the parts so he can make a test? He does not. He is not disturbed with chances for busted thumbs.

He marks the units which need replacement, it is driven into the slot used by the installation crew and they go to work. When the rebuilt parts are installed, it is delivered back to the dynamometer for tune-up and test. In the case of replacement of one or two parts—for instance, a carburetor and a generator—the installation crew may perform the work without moving the unit from the dynamometer stand.

While this is going on, the dynamometer operator will return to his machine shop department, which is only a few steps away, and resume the rebuilding operation of carburetors, fuel pumps and distributors.

Brake Service Crew

THERE are two men in the brake crew. They check brakes and nothing else. They constantly test tractors and trailers for brake conditions. We have a motor-operated floor tester with large visible gages. Adjustments are made when needed.

(TURN TO PAGE 164, PLEASE)

The OVERLOAD



by **GEORGE T. HOOK**

Editor

Correct Truck Application

THE PRIMARY requisite of efficient fleet operation is correct application of the motor truck to the job it is expected to perform. If a truck is misapplied its cost of operation can be double and triple what it should be.

* * *

The preventive maintenance program can be perfection itself, and drivers can be selected and trained until they leave nothing to be desired, but these will not prevent a misapplied truck from costing more to operate than it should.

* * *

Correct application is not just a matter of selecting a certain model. It is a matter of determining what units are needed throughout the truck—from tires to body, engine to axle ratio, the correct transmission, springs, brakes, electrical equipment, etc.

* * *

So it is a pleasure to announce that beginning next month *Commercial Car Journal* will start exclusive publication in serial form of a book on this most important subject.

* * *

The book itself was prepared by The White Motor Co. It represents the first attempt to bring together the correct application methods and ideas of engineers, transportation experts, outstanding fleet operators and other authorities. In the preparation of this much-needed material, The White Motor Co. expended a great deal of man-hours and thousands of dollars. The direct beneficiary is the entire field of truck transportation.

* * *

Correct application entails eight steps. Each step will be published complete. Filed away for future reference the series should prove its value in dollars and cents to fleets that make use of it.

Motor Vehicle Codes

THE MOTOR Vehicle Codes of many states are antiquated, over-amended documents that should be overhauled and modernized. It may be a straw in the wind that several states are planning code revisions. Truck operators should make their own plans to take a hand in the proceedings.

* * *

In all cases where a motor vehicle code revision is undertaken, the spade-work should be placed in the hands of a really capable committee. The committee should be representative of truck operators and commercial vehicle manufacturers. This will insure agreement on recommendations that entail engineering or operating changes.

* * *

Because in many states manufacturer representatives are not readily available, and because there is need for a coordinated code revision effort, the Automobile Manufacturers Association might give some thought to organizing a code revision committee. The three or four men on this committee should be men who have specialized in truck legislative matters, and who have an engineering background. Such a committee should be available to all state truck associations for direct participation or consultation in code revisions.

* * *

By acting for vehicle manufacturers in all states, the committee will be in position to suggest ways and means of attaining greater uniformity. Above all, familiarity with the best features of the codes of particular states, will enable the committee to bring them to the attention of other states.

Fleets Picked to Show

THE FLEET field has been accorded signal recognition. Fleets with 25 or more vehicles and having their own maintenance shops will be eligible to attend the Automotive Service Industries Show, Dec. 11 to 13 inclusive, Navy Pier, Chicago. This is the world's largest trade exhibition. The exhibitors are manufacturers of automotive replacement parts, shop equipment, accessories and supplies.

* * *

Any fleet that receives an invitation from an exhibiting manufacturer will find it profitable to attend the show, get a glimpse of the new things that are offered, and make valuable manufacturer contacts.

* * *

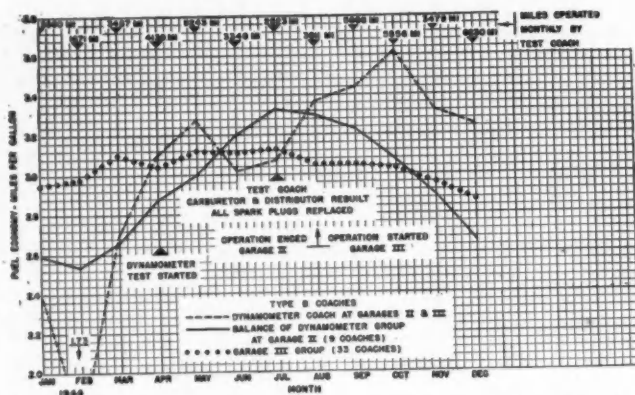
Automotive wholesalers express fear that permitting fleets to attend will "accentuate or encourage direct selling to fleets on the part of manufacturers." This remains to be seen. Some items lend themselves to "direct selling." In such cases it is inevitable that in this price-conscious period attempts should be made to bypass the middleman.

* * *

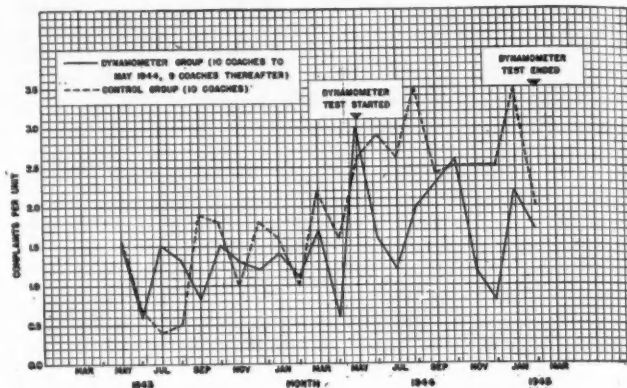
But the day of the automotive wholesaler is far from over. Fleet operators on the whole will continue to look to him for the large variety of items that it would be uneconomical for fleets to stock themselves. They are content to let him have the privilege of tying up large wads of money in inventory.

* * *

As for the manufacturers, we congratulate them on the recognition they accorded the fleet field. The investment they make in their exhibits is huge and it is natural that they should seek to get maximum display and market penetration for the money expended. The fleet operator is too important a customer of the wholesaler and the manufacturer to be disregarded.



Graph shows a comparison of one test vehicle with the group of coaches of the same model. Fuel economy increased with the dynamometer-tested coach



Driver complaints dropped off with more accurate engine adjustments. Graph shows comparison of complaints with test vehicles as against other group of control coaches

ETHYL CORP. fleet engineers have often been asked about chassis dynamometers, regarding their value as a maintenance tool, the size fleet that could afford such a unit, and many other factors on which no appreciable amount of factual and detailed information has been available. In order to obtain a more authenticated appraisal of the chassis dynamometer a detailed investigation was formulated. A heavy-duty unit was purchased and, after some consideration, it was decided that a city bus property would present a good proving ground for it.

The test was started in January, 1943, and continued for two years to December, 1944. The chassis dynamometer was used at one garage for fifteen months and in another garage for nine months. Figs. 1 and 2 show the installation of the dynamometer at the St. Louis Public Service property. The first garage will be known as Garage I, and the second garage as Garage II. At Garage I, 10 coaches of one make and 5 of another make were used as test vehicles, while 11 and 5 coaches, respectively, of the same makes were used as control units. At Garage II, 10 coaches each, of the same type vehicles that had been under observation at Garage I, were used for test and control units.

Throughout the entire test the basic program which had been established as an objective before the first wheel was turned, was rigidly adhered to. This program consisted of studying the application or combination thereof, of the the following items, which



The chassis dynamometer used in one garage for 15 months and in another for 9 months on a St. Louis Public Service property. Results prove dynamometers up economy

DYNAMOMETER

would be best served by the use of a chassis dynamometer in a fleet.

1. General inspection tool wherein each coach is dynamometer tested after each regular pit inspection.

2. Spot check tool whereby random selection of a few coaches of each type would serve as dynamometer test units for the purpose of checking the caliber of floor inspection methods.

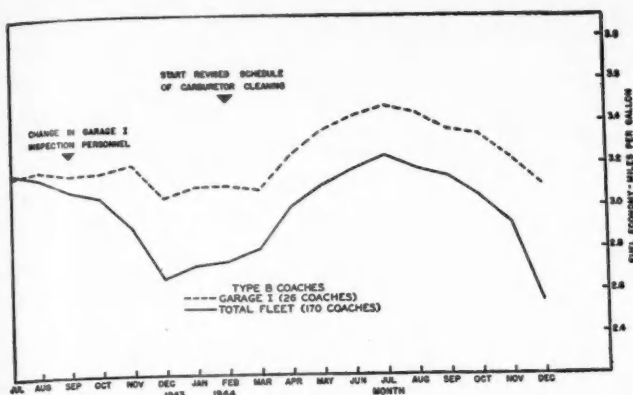
3. Means of determining adjustment standard such as ignition timing, valve lash, spark plug gap settings, carburetor calibration, etc.

4. Special problems and trouble

shooting work to find solutions to chronic failures or complaints.

5. To determine if vehicles tested on the chassis dynamometer, which have ignition timing adjusted to give the most satisfactory operation on the fuel used and which have carburetor calibration maintained within reasonably close limits, show any improvement in fuel economy over those units which are subjected to routine fleet maintenance only.

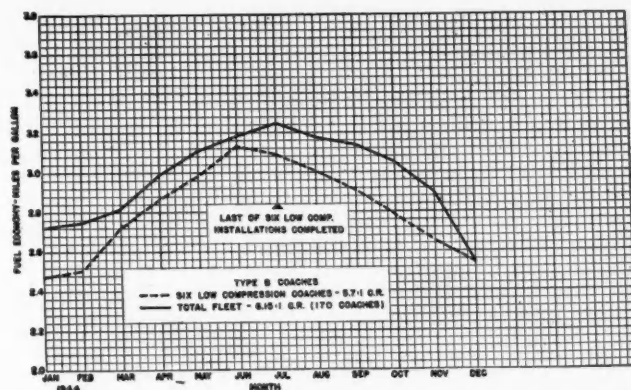
6. To determine if decreased engine road failures and driver complaints are obtained on a group of vehicles which are inspected and ad-



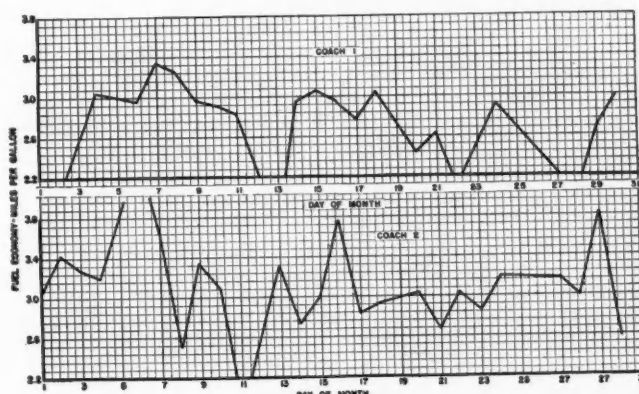
Dynamometer checks with a change in garage personnel shows up in improved operating economy. Variations in mileages are a direct result of seasonal changes

Ethyl Corp. finds the dynamometer superior as an inspection tool, for obtaining precision engine adjustments, for trouble shooting and for solving chronic engine ills

by **E. J. GAY and H. T. MUELLER**
Technical Service Dept., Ethyl Corp.



A comparison of six low compression coaches with the remainder of the standard ratio group operated by all garages. Loss in mileage is 8%, representing \$100 per coach per year



A month's study of two vehicles shows variation in mileage from day to day. Driver influence seems to determine variation to some extent. Better driving can improve economy

Cuts Road Calls 20%; Ups Fuel Mileage 10%

justed under operating conditions simulating road operation as compared to those receiving the regular floor inspection.

Presentation of Data

AT THE START of the program, it was apparent that the chassis dynamometer would have to prove its value, where used by a large city bus fleet, by effecting reductions in one or all of the following items:

1. Reduction in fuel consumption.
2. Reduction in number of driver complaints.
3. Reduction of road calls.

The sum total of these 3 items, is of course, a reduction in net maintenance costs.

After the two years of operation at St. Louis, the analysis of the data in regard to the above 3 items indicates the following:

1. Increases in fuel economy in the order of 8 per cent to 10 per cent were obtained. The greater part of this increase was the result of improved carburetor maintenance, prompted by the use of the dynamometer and a study of the fuel consumption records. This represents a saving on the basis of today's costs,

of approximately \$125.00 to \$150.00 per year per coach, of the types used.

2. The average number of driver complaints per unit was reduced by 12 per cent to 15 per cent. In this connection the dynamometer has its greatest effect in reducing "No Power" complaints.

3. Analysis of road call data shows some improvement. Operating conditions at the various garages resulted in a wide variation in the number of road calls. Average reduction on a per unit basis was approximately 20 per cent.

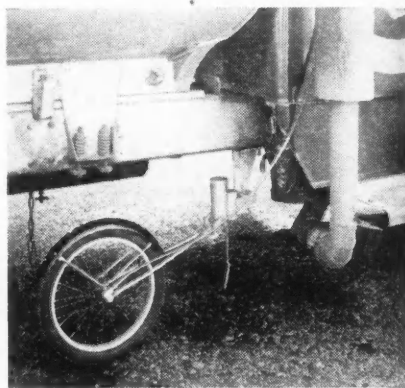
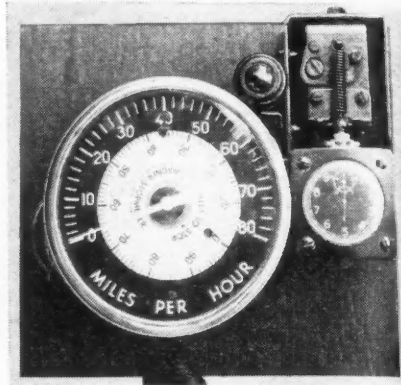
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VEHICLES TESTED



Typical of vehicles tested are the Freightways six-wheel truck and six-wheel trailer (left) and Silver Eagle six-wheel truck, four-wheel trailer (right). Four-wheel trucks with four and six-wheel trailers were also included. Average g.v.w. was 72,000 lb.

TESTING EQUIPMENT



To avoid inaccuracies, special equipment included Stopmeter with tested speedometer and odometer dials, electrically operated stop-switch, signal light (top photo), and separate driving wheel for Stopmeter (above). To compare time lag, switches on the brake treadle actuated solenoids to stop and start the watch. The signal light could be actuated by either or both switches, or manual to signal application of brake. Moving pictures of the instruments were taken to fix the speed at time of brake application and to permit study of deceleration rates at different periods of the stops

Time Lag Tests

Point Way to Better Air Brake Performance

**ATA experiments with 72,000-lb. West
Coast combinations show how modifications
can increase speed of brake application**

THE EQUIPMENT AND MAINTENANCE Section of the American Trucking Association, Inc., has made an extensive study, including hundreds of tests, on trucks and trailers using air brakes. We have found that good maintenance will not overcome the shortcomings of a poor air-brake installation. We wish to offer to manufacturers of air brake assemblies suggestions for improvements in some of their products. However, truck and trailer manufacturers can do a great service to the trucking industry by selecting the correct size and number of air brake parts. Extreme care must then be exercised in piping the system if trouble-free, fast-acting, brakes are to be obtained.

Tests indicate that there is little or no difference between loaded and empty stopping distances, on multi-axle combinations—if the brake sys-

tems are adequate. Furthermore, with the same air brake design, truck and trailer combinations, with varying numbers of axles, have similar stopping characteristics. Shorter and safer stops were made without sliding any wheels when an air brake system provided faster pressure rise in the brake chambers.

Speed, time and distance were carefully determined before comparative brake tests were made. To avoid inaccuracies we used the highly specialized equipment described in the accompanying illustrations. With it we were able to separate braking characteristics into the following:

1. Driver reaction time.
2. Air-brake system reaction time.
3. Time required to stop after deceleration was noticeable.
4. Distances traveled during driver reaction time.

5. Distances traveled during air brake system reaction time.

6. Distances traveled after deceleration began until stop was completed.

7. Deceleration rates for any portion of the stop.

8. Pressure rise to brake chambers for any time interval.

9. Over-all time required to stop.

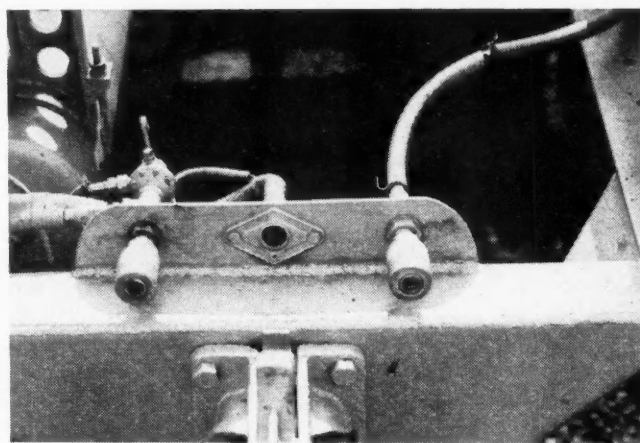
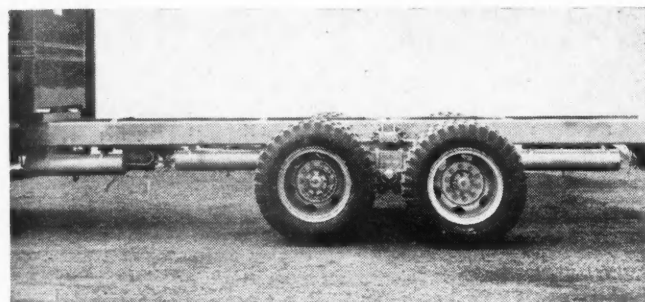
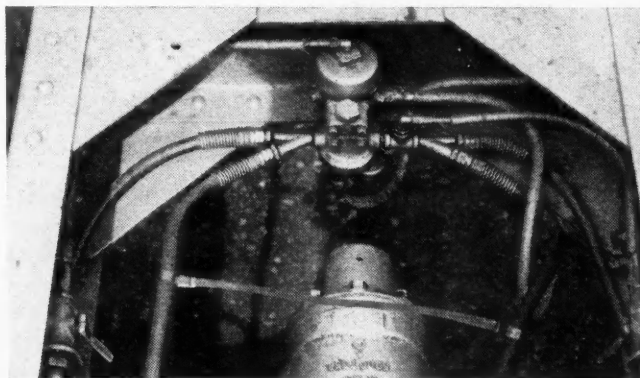
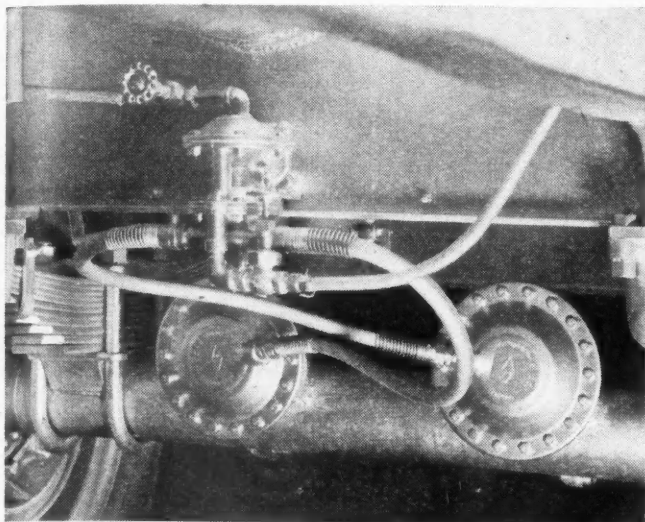
10. Over-all distances required to make a stop.

11. Braking time required to stop. (Some theoretical value.)

12. Distance required to stop.

Driver reaction time will not be

BRAKE SYSTEM MODIFICATIONS



STREAMLINED PIPING (top left). Here one relay valve supplies only two brake chambers through piping free of all elbows and restrictions. Shut-off valves are for test purposes, but may be used to cut off parts of system in emergencies.

THREE TANK INSTALLATION (above left). Front tank serves only as condenser, has $\frac{3}{4}$ -in. tubing from compressor. Middle tank is pilot tank from which foot valve and other accessories are served. Check-valves before and after this tank prevent loss of air in case of broken lines. Clean air in rear tank is for brake application only, controlled by emergency relay valve which also provides emergency brake.

LATERAL Y's (top right), help to streamline air flow from this relay emergency valve serving four brake chambers. But valve is too slow; should be modified to permit greater flow capacity and to include four $\frac{1}{4}$ -in. female ports. T at right is to supply air gage on dash. An additional $\frac{1}{8}$ -in. female port should be provided in the relay valve for this purpose.

AUTOMATIC INDUSTRIAL COUPLERS (above right) speed up trailer brake applications. They open and close automatically eliminating shut-off cocks, leak less air, are lighter, less expensive, more positive, trouble free. Still better couplers could be produced by air brake manufacturers for truck use.

considered here because it was found that some drivers react faster than others, and that some drivers would place the left foot against the brake treadle, and in this manner, show surprisingly little reaction time. It has also been found that conveniently placed short stroke brake treadles are advantageous. We suggest that brake treadles be approximately the height of the accelerator treadle; both should be low and comfortable, with short enough stroke travel so that driver does not have to remove heel from treadles to get complete release.

Tests showed that engine compres-

by JULIUS GAUSSOIN

President, Silver Eagle Co.
Portland, Oregon

sion did not materially affect stopping distances from speeds below 20 m.p.h. but, to prevent doubts and criticism, only stops with transmissions shifted to neutral position, before starting the stops, are considered.

From our experience it appears that a lag test is the best method to determine whether or not an air brake system will quickly apply the brakes. The results of these tests, to-

gether with a comparison of stopping distances between the 72,000 lb. truck-trailer combination and a passenger car are shown in the charts on the next page.

The principal modifications made in the air lines which resulted in much faster brake application time, particularly on the trailer, are shown in the accompanying illustrations.

Engineering Comments

FOLLOWING these tests, a conference of truck operators was held, and it was agreed that each of these
(TURN TO NEXT PAGE, PLEASE)

Time Lag Tests

(Continued from Page 41)

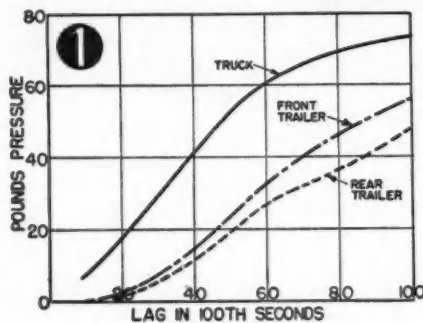
combinations could be somewhat improved if the following pertinent items were kept in mind:

1. Large brake chambers increase application "lag."
2. Front wheel brakes increase brake "lag."
3. Larger relay emergency valves will reduce "lag."
4. One relay emergency valve for each pair of brake chambers will reduce "lag."
5. Short-throw, large foot valve speeds up action of relay valves.
6. Industrial air couplers, with a minimum of fittings on jumper hoses to trailer, will speed up trailer brakes.
7. Quick release valves, elbows, "Ts" and other restrictions increase brake "lag."
8. Chamber size and lever length should be adjusted so that tires leave only a trace of rubber on the pavement (but brakes should not lock wheels).
9. Slow, or low, air pressures to the brake chambers must be remedied.
10. A close range between the minimum and maximum air-governor settings is very desirable.

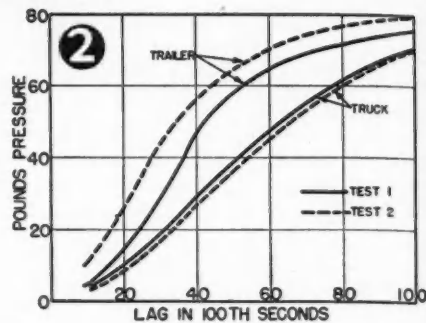
Conclusions

IN CONCLUSION, we believe that better air brakes can be designed, for greater safety, faster application, lower maintenance, and more dependability. Truck and trailer manufacturers using power brakes should study and select brake assemblies carefully, and give more attention to the installation in their equipment. The often seen words on the rear of trucks and trailers, "Danger—Air Brakes," glaring out at the motoring public, is definitely harmful to the trucking industry's efforts to gain confidence and improve public relations. Let's all work together, by coordinating the technical knowledge of manufacturers and the practical experience of truck operators, to the end that a faster and safer air brake shall be developed. Then a sign reading "Safe—Air Brakes" can be carried, as a true and proud banner.

TIME LAG TESTS

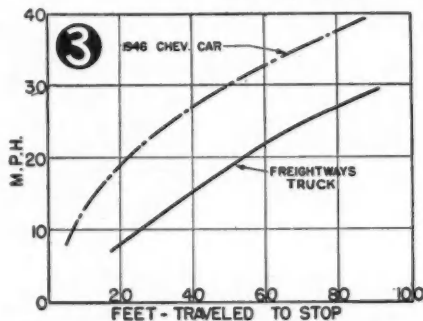


WITH CONVENTIONAL AIR HOOK-UP (Chart 1) six-wheel truck and six-wheel trailer revealed lag characteristics shown by these curves. One relay valve supplied four chambers on truck, another the two front chambers of trailer. Four rear trailer chambers were supplied by an emergency-relay valve. Jumper hose assembly consisted of conventional shut-off cocks, couplings and metal-cored hose. A quick-release valve slowed actuation of front trailer brakes. Otherwise system was free from T's and elbows.

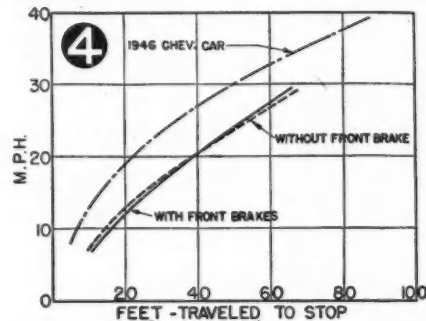


WITH MODIFIED AIR HOOK-UP (Chart 2) trailer brakes were made to react faster than truck brakes. Automatic industrial couplers were substituted for conventional type. In Test 1, these were connected to .247-in. tube on draw-bar by short rubber hose with additional hose from tube to fittings. Still further improvement is shown in Test 2, when full-length rubber hose was used all the way from the automatic couplers on the truck to air fittings on the trailer, thus proving effect of streamlining.

STOPPING DISTANCE TESTS



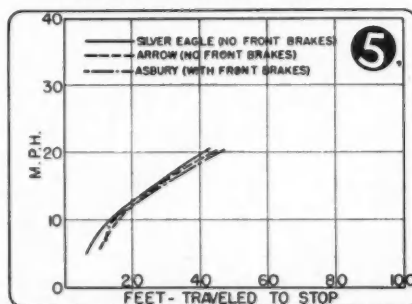
WITH CONVENTIONAL AIR HOOK-UP (Chart 3) truck-trailer combination described in Chart 1 compared in this manner with passenger car. Although deceleration rate of truck-trailer was approximately the same as that of the passenger car, time lag delayed the truck stop by 30 ft. (Car stopped in 22 ft. from 20 m.p.h.; truck took 52 ft.)



WITH MODIFIED AIR HOOK-UP (Chart 4) truck-trailer compared much

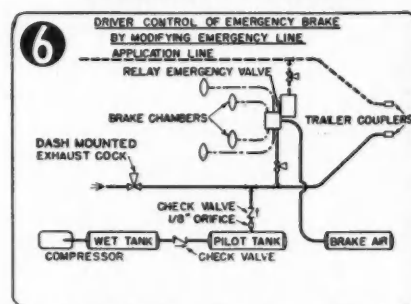
more favorably with passenger car. Stopping distance from 20 m.p.h. was reduced by 12 ft. Note that stops from speeds up to 20 m.p.h. (and there were some as high as 32 m.p.h.) were better with front brakes "off." The additional lag when the front brakes were operated slowed down the whole brake system. Thus speed of application takes precedence over rate of deceleration and streamlined connections appear more important on combinations than front brakes.

FRONT BRAKE TEST



WITHOUT FRONT WHEEL BRAKES (Chart 5) Arrow and Silver Eagle rigs stopped faster than Asbury job with front wheel brakes at speeds above 12 m.p.h. All vehicles for this test were tank truck and trailer combinations of 72,000 lb. g.v.w., equipped with modified air systems described above, selected from regular over-the-road equipment and checked before the tests started.

EMERGENCY BRAKE



DRIVER CONTROL of emergency brake (Chart 6) is provided in this simple installation which permits him to "dump" the air from the pressure line through dash-mounted exhaust cock, causing emergency valves to function. This feature permits application or release of emergency system with reasonable control. Stops in 50 ft. from 20 m.p.h. can be made with this emergency control.

COMPARISON OF HIGH COMPRESSION AND PRODUCTION ENGINE

	12.5 C R	1946 ENGINE
NUMBER OF CYLINDERS	6	6
VALVE ARRANGEMENT	OVERHEAD	L-HEAD
BORE AND STROKE	3 3/8 x 3 3/8	3 1/2 x 4 1/8
DISPLACEMENT - CU. IN.	181	238
COMPRESSION RATIO	12.5	6.4
COMPRESSION PRESSURE AT 2000 RPM	420 PSI	165 PSI
PEAK PRESSURE AT 2000 RPM	1150 PSI	525 PSI
ENGINE TORQUE AT 2000 RPM	154	163
MECH. EFFICIENCY AT 2000 RPM	95%	81.5%
MAXIMUM BHP	95 AT 3600 RPM	85 AT 3400 RPM
MINIMUM BRAKE SP. FUEL	40 AT 2000 RPM	54 AT 2000 RPM
MILES PER GALLON AT 40 MPH	26.5	18.5
HEAT REJECTION TO WATER - BTU/BHP/MIN.	31.5	45.5
REAR AXLE RATIO	3.63	3.63
CAR TEST WEIGHT - LBS.	4110	4110

Fig. 1. Comparison chart shows HC engine has more horsepower despite drop from 238 to 181 cu. in. displacement

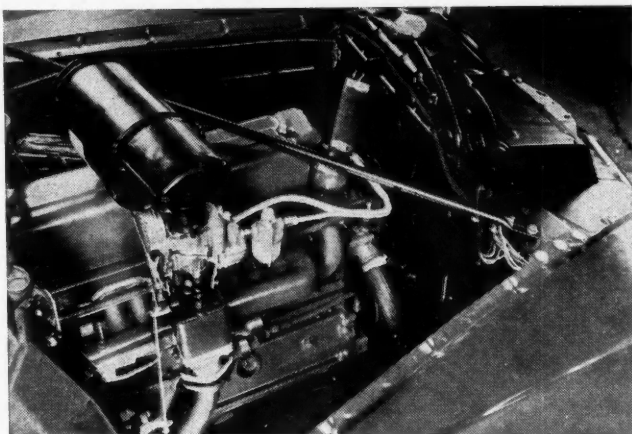


Fig. 2. Photo of new engine reveals little difference in appearance. It is mounted in Oldsmobile passenger car

A Gasoline Engine with 12.5 to 1 Compression Ratio

GM's new experimental model proves

both practical and efficient.

Improves fuel economy by 35%

V CAN A REAL HIGH compression gasoline engine be built and how high?

Will it be the small package the "Buck Rogers" designers have been talking about?

Can it be made as smooth as a conventional motor car engine?

These and other questions have been bandied about for a long time. The answer was given by Charles F. Kettering of General Motors Corp. at the French Lick meeting of the Society of Automotive Engineers last month.

At French Lick he demonstrated three Oldsmobile Sixes. Two had his overhead valve 12.5 to 1 compression ratio engines, the other had a standard Olds

Six for comparison. One of the new high compression engines ran on triptane—the miracle fuel that's off the octane scale; the other ran on a special leaded fuel termed semi-commercial by the refiner who supplied it. The main purpose of the demonstration on the "winding" Indiana highway was to show the smoothness and flexibility of the high compression powerplant.

It convinced everyone that the high compression engine can be as smooth as a conventional motor car engine on the road and idling.

If this sounds prosaic just remember that only a few months ago at an SAE meeting it was definitely asserted by engineers that you

can't build a high compression engine without roughness and vibration. Why did Kettering find the solution? Perhaps the simplest explanation is that he designed for the highest compression possible, using all of the tricks known today, then tuned it down to a mere 12.5 to 1, while others have taken conventional engines and tried to step them up. Obviously the Kettering method is the one that worked.

181 vs. 238 cu. in.

THE SPECIFICATION comparison between the new engine and the Olds Six is found in Fig. 1. What they did was to aim for an engine to fit the Olds Six chassis and meet the operating characteristics of the standard Six. Note that the new engine with displacement of 181 cu. in. as compared with 238 develops 95 hp as against 85 for the conventional job. However, the weight of the two engines remains about the same. The new engine had to be made huskier and more rigid to eliminate roughness and vibration. It has a heavier crankshaft and seven main bearings instead of four. And the crankcase is considerably stiffer.

Fig. 2 is an actual photograph of the new engine installed in an Oldsmobile chassis. You are looking not at a production engine but at what may be termed a laboratory instrument intended to demonstrate a principle. It is of valve-in-head design like a Buick or Chevrolet with camshafts made with Buick tools, a Chevrolet intake manifold and carburetor.

(TURN TO PAGE 130, PLEASE)



SHOP HINTS

FROM FLEET SHOPS

\$5

FOR ALL HINTS
PUBLISHED
EACH MONTH



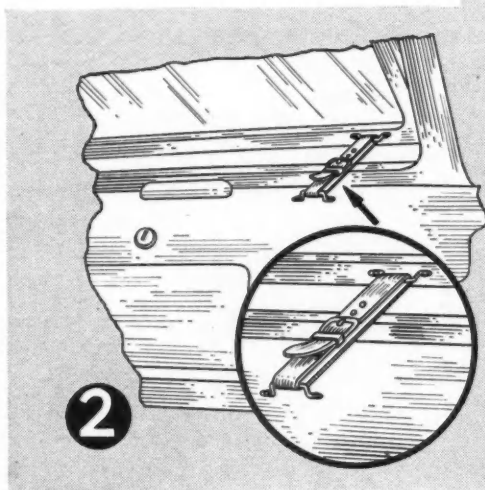
Now is the time for all good mechanics to make themselves some extra cash. All . . . ya gotta . . . do, is sit down and write up one of your shop's favorite short cuts to maintenance—or else some info on a durned good homemade shop tool. It might be a tip on salvaging some of that junk hang-around the back room—and it could be on an improved repair method that your shop has developed. You don't like to write? Well, draw a picture—shoot us a diagram with a few simple words. We'll attempt to figure it out. We will do the work, but we want your idea. For five fms, men, you can't go wrong. Give it a try, and you may hit the jack pot of \$25, with five bucks the absolute minimum for an accepted service hint or a short cut to maintenance.

1. Transmission Ventilation

by Jean Babin, Shop Supt.
Columbian Laundry, Newark, N. J.

We have run into some trouble with gear oil running out of the back of the transmission and following the clutch shaft to the clutch plate. This was due to pressure buildup on long runs.

We have licked this trouble by putting an air vent in the transmission cover. We drill a hole on the top cover and tap it for a 1/8-in. pipe thread. We screw a "T" into the hole with a 1/2-in. nipple. This keeps the oil from coming out and allows proper ventilation of the unit. It has saved changing many clutch plates.

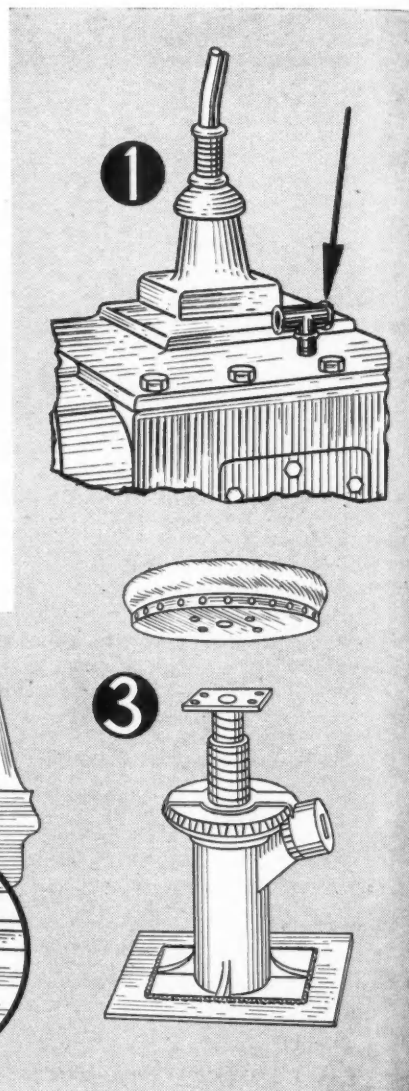


2. Windshield Lock

by Fred W. Tenfel
Union, N. J.

One feature in the design of the cabs on our trucks causes a number of maintenance headaches. The windshield, when opened for ventilation, rattles and eventually causes the glass to break.

Here is a simple remedy which will stop this trouble. It is a pair of roller skate straps or anything of similar type which are used to hold the windshield against the normal tension of the adjusting mechanism. A bracket is bolted to the windshield frame and to the dash at the proper spot and the straps are used to hold the windshield when it is opened.



3. Mechanic's Seat

By F. E. Seftchick
Swift & Co., Brooklyn, N. Y.

Here is a home-made mechanic's seat that has been found to be indispensable in our shops. Being adjustable, it makes many jobs around the valves or the wheels much easier.

Weld a 1/4-in. sheet steel piece to

\$25

FOR THE BEST
HINT PUBLISHED
EACH MONTH



\$25
HINT
OF THE MONTH

Jig for Bending Trailer Bows

by George Gonzalez

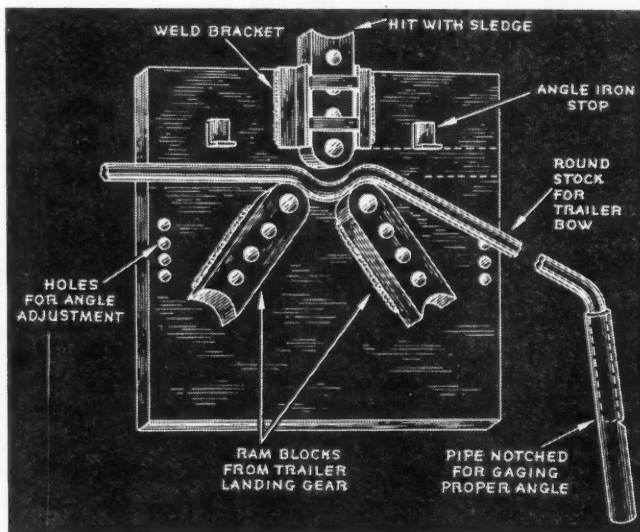
Rock Island Motor Freight Transit Co., Chicago

Here is a jig I rigged up for making bows for open top trailers. Uniform bows to fit any truck or trailer can be made out of any round stock with this bending device.

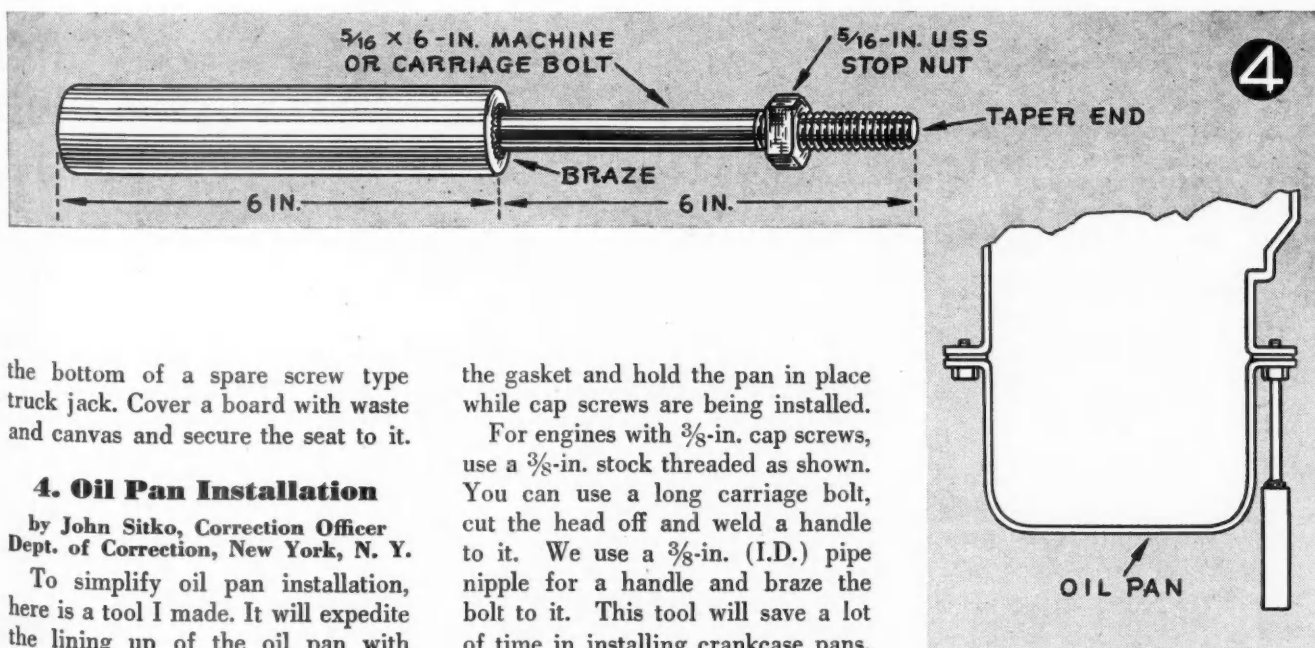
The jig is made of a 1/2-in. steel plate 18 in. square. I selected three ram blocks from the trailer landing gear for the blocks as noted in the drawing. Two pieces are welded to the plate as shown to form the rest for the round stock. The third ram is placed in a bracket which is welded above and is fitted so that it will slide up and down as required.

Next holes are drilled in the sides of the plate and fitted with pegs so that the desired angle can be set in the rod. Angle iron stops are then welded to the plate as shown to act as upper stops for the bows.

The bow stock is heated, placed in the jig, and the upper ram is hit with a sledge or heavy hammer. With the guides arranged in this way, uniform curves are set in the stock with a couple of hard blows. This offset forms the seat for the ridge pole of top.



Side angles are set into the bows with the gas pipe shown. It is notched at the desired spot so that the length of the lower arm can be gaged. Pre-heating of the bow will enable the mechanic to set the proper angle to the side piece in this way.



the bottom of a spare screw type truck jack. Cover a board with waste and canvas and secure the seat to it.

4. Oil Pan Installation

by John Sitko, Correction Officer
Dept. of Correction, New York, N. Y.

To simplify oil pan installation, here is a tool I made. It will expedite the lining up of the oil pan with

the gasket and hold the pan in place while cap screws are being installed.

For engines with 3/8-in. cap screws, use a 3/8-in. stock threaded as shown. You can use a long carriage bolt, cut the head off and weld a handle to it. We use a 3/8-in. (I.D.) pipe nipple for a handle and braze the bolt to it. This tool will save a lot of time in installing crankcase pans.



Calls Two Strikes on Lubrication

**Renegade fleetman, turned oil man,
umpires some foul plays on the part of
operators, shows why oil and grease
can't make up for lack of shop cleanliness**

by JOSEPH M. SILLS

Technical Division, Automotive,
Socony-Vacuum Oil Co., New York



▼ WHAT IS THE most important thing in properly lubricating a fleet? The answer to me isn't engine oil, grease or gear oil. It is the way these products are used and abused.

What is the worst abuse? Dirt. I can't think of any more elaborate term. I can, of course, use adjectives and say blankety blank filthy dirt and that is what it is.

What if you opened a brand new drum of grease and right on top you found a nice handful of dirt? You couldn't jump fast enough to phone your supplier and give him hell, and you would make him take the stuff back. You might even get mad enough to change suppliers. On the other hand, you think nothing of opening that same fresh barrel of product and leave the lid off or the bung open and let it accumulate that same handful of dirt before it is consumed. You think nothing of dipping a dirty hand into the barrel in order to "hand pack" a bearing. I should call it "hand wreck" a bearing. You may have very carefully washed that bearing in solvent. You might even have it clean when it comes out of the cleaning bath before you start to handle it with dirty hands. Then you might even set it down on a dirty bench while you go over and dip a dirty hand into the grease supply. Somehow or other you manage to put some dirt into the bearing before you put it back in service. It may be in packing the hub, where the dirt may be knocked from the brake, or the wheel as it goes back on. It can be and is added in a hundred different ways. When the bearing fails you call in the oilman and say "look



How the Black Hand Gang "Gets" a Ball Bearing

THE ball bearing will last quite a while—as it is designed to do—if it only has to flex under designed load conditions. Now comes the back hand gang puts one or two microscopic pieces of DIRT on the race. What happens, The flexing is increased each time the piece of DIRT passes under the ball. It's like a stone in your shoe—it hurts! The fact is, if left there, a stone in your shoe will wear a hole in your foot. In much the same manner, DIRT in a bearing will wear a hole in the race or the ball—or both!

★ ★ ★ ★ ★

what your blankety blank grease did to my poor bearing."

I don't know one man from another here tonight. I don't know which of you keeps a clean shop, and which of you tolerates a dirty shop. I don't know who among you maintain a clean vehicle, nor do I know who among you insist on clean garage personnel — clean overalls, clean hands and clean faces too. They all are important from an oil man's viewpoint. I have walked into a good many garages since the war where, without even saying good morning to the man in charge, I know that there are two strikes on our products, before they even begin to do their job of lubricating the vehicle.

★ ★ ★ ★ ★



"DIRT can be, and is, added to a lubricant in a hundred different ways . . . Look into the measuring can, or at the pouring spout, to find the dirt you have been adding with the oil."

★ ★ ★ ★ ★

Let's stop and consider the job that a ball or roller bearing is called upon to do. Contact between ball and race is theoretically a point contact; in the case of the roller bearing it is a line contact. A point is defined as a location without area. Pressures at this theoretical point can and often do reach 500,000 psi. Practically speaking, of course, it no longer is a point without area when this

load comes on. This has been very clearly proven by one of the big bearing manufacturers, who statically loaded a bearing and then blew a sulphide gas over it. When the race and ball were inspected it was found that the area of contact was elliptical, showing that the ball and race are elastic and change shape under pressure, much the same as a tennis ball would do if you pressed on it with your hand when in contact with a table. This flexing can only take place so many times before fatigue failure takes place. This phenomenon will take place regardless of the lubricant used in the bearing and can be demonstrated easily by flexing a common paper clip. Its intended use includes only slight flexing and under these circumstances it will last a long time. However, bend it to 90 deg. a few times and see how rapidly it fails through fatigue.

Going back to the ball bearing—it too will last quite a while—as it is designed to do—if it only has to flex under designed load conditions. Now comes the black hand gang, puts one or two microscopic pieces of dirt on the race. What happens? The flexing is increased each time the piece of dirt passes under the ball. It's like a stone in your shoe—it hurts!

The fact is a stone in your shoe if left there will wear a hole in your foot in much the same manner as dirt in a bearing will wear a hole in the race or the ball, or both! The experts then look at the wreckage and solemnly declare it's metal fatigue. Some might even say lack of lubrication.

Now I don't want to imply here that dirt only gets into roller bearings—by no means.

Let's for a moment, consider the transmission and the differential. In some shops I have seen recently it would be almost impossible to add lubricant to either of these parts without also adding dirt. It goes in when the filler plug is removed. It goes in when the dirty finger goes in to test the level. It goes in almost without fail when the filling nozzle is applied.

Now consider what the gears inside this box have to put up with. They are asked to operate at ambient temperatures of from -50 to +200 deg. Fahr. The gear teeth must operate at temperatures up to welding heat. Pressures on the teeth may range from 75,000 to 450,000 psi., and rubbing speeds may be as high as 1800 ft. per min.

Now let's throw in a little dirt. After the gears fail, the experts look at them and say "too bad—scored, scratched, fatigued, etc." What they really mean is that the poor gears were irritated to the point of failure by what you did when you threw in that dirt.

★ ★ ★ ★ ★



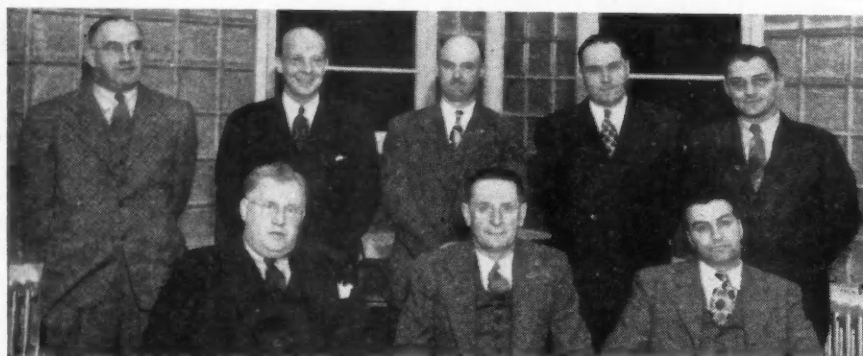
"You think nothing of dipping a DIRTY hand into the barrel to hand pack a bearing—I should call it 'hand wreck' a bearing."

★ ★ ★ ★ ★

Dirt in Engine Too

NOR DO we need to confine this talk to bearings and gears. Let's look at the engine. Look into the measuring can or at the pouring spout to find the dirt you have been adding with the oil. Or if you use a pressure dispenser, what about the dirt that is added again with your dispensing nozzle? It is almost impossible to find any such equipment that is surgically clean. And we haven't yet talked about the dirt around the filler cap, or the dip stick, or the man that is handling the oil. All we need is a little abrasive material in the oil, no matter how it gets in, to accomplish the abuse I have been talking about. The engine

(TURN TO PAGE 170, PLEASE)



Buffalo group directors, Front row: Ben Roop, H. D. Taylor Co., Martin Doeber, Burgard Vocational High School; Charles I. Palisano, Boss Linco Lines. Second row: P. J. Boger, Socony-Vacuum; P. J. Snyder, Goodyear; R. W. Kimpton, Ethyl Corp.; W. M. Kunz, Int'l Railway Co., Joseph Stampfel, White Motor Co.

No Holds Barred in Fleetmen's Maintenance Clubs

Informal groups provide opportunities to swap ideas, air common problems and profit by other fellow's experience

by BART RAWSON
Associate Editor, Commercial Car Journal

FLEETMEN IN VARIOUS sections of the country are putting the bee on maintenance through the medium of informal maintenance clubs or associations dedicated to the single but vital need of better truck maintenance. While there are a considerable number of these organizations throughout the country, some new and some old, we are limiting our discussion to two such groups concerning which we have current first-hand knowledge. One is a group that has been in operation in the Metropolitan New York area for a number of years; the other is an organization in Buffalo that is just a little less than one year old. Both are performing extremely worthwhile services in their respective communi-

ties, each approaching the problem of operation from widely divergent points of view. It is believed that fleetmen everywhere should find the comparison informative in shaping similar organization of their own.

It should be noted at the outset that these groups do not compete in any way with either the Society of Automotive Engineers or the American Trucking Associations and the various local or state affiliates of these organizations. While these two groups have and will continue to serve admirably to keep members informed on matters of national and even sectional interest, they have failed in the larger communities to provide a long felt need for a means of interchanging local ideas on purely

maintenance subjects. In the smaller communities they have failed to reach fleetmen too far removed from metropolitan centers where local chapters are organized. Out of these two short-comings unfolds the dual purpose of the newer groups—(1) to provide a common meeting ground for fleetmen in communities too small for national groups, and (2) to provide a much more informal atmosphere for the discussion of local maintenance problems.

Organizations Differ

IN THE greater New York area, the Motor Truck Maintenance Club is probably one of the most exclusive groups in the world. To be a member you must be in direct charge of the maintenance of a commercial fleet. In addition, you must be proposed by a member, accepted by the membership committee, and meet the conditions set forth in the constitution. The net result is an active membership throughout the year, averaging about 30 in number, and the average attendance is about 20 members. The club holds nine dinner meetings a year, and is fortunate in securing the facilities of the famous New York Athletic Club.

The Truck & Bus Maintenance Association of Buffalo obviously does not have nearly the membership potential of the New York group, hence is much less exclusive. Not only may fleetmen join the organization, but membership is also extended to parts, truck and material suppliers, all of whom, however, must exhibit a genuine interest in fleet maintenance problems, and all of whom must

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N. Y. group officers. Left, D. C. Jewett (Krueger), pres. Right: R. H. Arnold (Consolidated Edison), Sect.-treas. Not shown: J. M. Buckley, vice-pres.





How Fleet Operators are Handling ROAD FAILURES

Part 2

Fleets are well equipped for many roadside repairs but use outside help when expedient

Analysis **by A. W. GREENE**, Managing Editor, Commercial Car Journal

Here are a Few of the Many Questions this Survey Answers

How far does the average fleet send a mechanic to handle road failures? . . . P. 50

Are drivers ever permitted to call outside shops for repairs? . . . P. 50

When fleets call in outside help for road failure repairs, do they call any shop or some special shop? . . . P. 51

What tools and parts do mechanics take on road failure service calls? . . . P. 52

What kind of work is a mechanic expected to do on the road? . . . P. 52

What types of vehicles do fleet shops use to send a mechanic out on road failure service calls? . . . P. 52

LAST MONTH, this department—the Fleet Operators' Experience Handbook—supplied data on the leading causes of road failures as well as the corrective and preventive measures fleets employ to reduce the number of road calls. This month, additional data is published on the road failure data furnished by COMMERCIAL CAR JOURNAL's Board of Experts, 254 of whom took part in the survey. This deals with the methods that fleet operators employ to handle road failures.

One of the many interesting facts gained from this study of Road Failures is that fleet maintenance men exercise close control over their vehicles, wherever they may be and whatever may happen to them.

Table 1 shows that the average maximum distance covered by fleet shop personnel to repair a road failure is 160 miles from the main shop. Fleet branch shops, how-

ever, on the average, travel only about 40 per cent of that distance.

In handling road failures the majority of fleets insist that drivers contact home base when the truck starts to "act up" or when a failure occurs. This is clearly shown in Table 2A. Only 13.93 per cent of the fleets grant drivers discretionary power to have repairs made on the spot without consulting the shop. However, some fleets impose certain conditions and time and cost limitations under which such repairs may be authorized. These are brought out in Table 2B, which is a summary of typical instructions fleet operators give drivers for handling road failures.

Comments in Table 2B also point out that even when fleets instruct their drivers to telephone the shop when trouble occurs, they do not always send out their own shop personnel to do the work. They "either go

out or authorize work done nearby." With such fleets the handling of repairs seems to be influenced by the term "minor." If needed repairs are of a minor nature, they say, drivers are instructed to use the nearest service available to get rolling.

The many comments received indicate that the decision to have repair work done locally is not only a matter of expediency, which is quite apparent, but also a matter of economics. It certainly would cost a fleet much more than \$5 or \$10 to have a disabled truck parked on the highway for an hour or more while a vehicle is being dispatched from, say, the fleet's branch shop to handle a repair that local facilities could remedy and send the truck on its way in half the time it would take for even the fleet's mechanic to get to the disabled vehicle—to say nothing of his return time or lost time in the shop.

... ROAD FAILURES

(Continued from Page 49)

Average Maximum Distance Fleets Service Road Failures

Table 1 Main shop mechanics are sent more than twice distance covered by branch shop men

VOCATION	From Main Shops		From Branch Shops		VOCATION	From Main Shops		From Branch Shops	
	Number of Fleets Reporting	Maximum Distance Covered	Number of Fleets Reporting	Maximum Distance Covered		Number of Fleets Reporting	Maximum Distance Covered	Number of Fleets Reporting	Maximum Distance Covered
BAKERIES—Retail & Wholesale.....	20	59.75	10	47.00	GOVERNMENT—State & County....	20	69.65	8	50.13
BEVERAGE DISTRIBUTORS.....	2	22.50	9	43.89	GOVERNMENT—Federal.....	10	86.50	8	59.00
COAL, COKE & ICE.....	3	30.67	1	10.00	GOVERNMENT—Municipal.....	15	67.42	3	75.00
COMMON CARRIERS—Over-the-road.....	15	177.00	11	95.90	INDUSTRIAL—Local and Over-the-road.....	2	110.00	1	100.00
COMMON CARRIERS—Local.....	15	23.00	4	20.00	LAUNDRY & DRY CLEANING.....	8	22.75	.....	.....
COMMON CARRIERS—Local and Over-the-road.....	15	105.34	12	66.25	NEWSPAPERS.....	2	47.50	.....	.....
CONSTRUCTION—Builders, Quarries, Gravel.....	8	86.88	4	80.75	PETROLEUM DISTRIBUTION.....	5	82.00	2	11.50
DAIRIES—Retail & Ice Cream.....	16	84.13	7	60.43	PETROLEUM PRODUCTION.....	3	83.34	1	100.00
DEPARTMENT STORES.....	3	66.67	.....	.....	PUBLIC UTILITIES—Gas, Water, Power.....	11	36.82	1	30.00
FOOD DISTRIBUTORS—Over-the-road.....	12	173.75	3	100.00	PUBLIC UTILITIES—Telephone.....	10	37.00	4	23.75
FOOD DISTRIBUTORS—Local.....	4	32.50	1	30.00	TRUCK RENTAL.....	6	86.67	2	110.00
FOOD DISTRIBUTORS—Local and Over-the-road.....	4	50.00	4	103.75	TRUCK & BUS FLEETS—Mixed.....	5	55.00	3	40.67
					TOTAL & AVERAGE for All Vocations.....	214	160.10	99	63.55

Table 1. Of the 254 fleets that participated in the Road Failure Survey, 214 supplied specific mileage limits for

road service calls. Of these, 99 had branch shops that covered 40 per cent of the areas serviced by their main shops

What Drivers Do in Event of Road Failure

Table 2A

86.07% are instructed to call own shop,

13.93% permitted to use own discretion

VOCATION	Number of Fleets Reporting	Call Shop	Use Discretion	VOCATION	Number of Fleets Reporting	Call Shop	Use Discretion
		%	%			%	%
BAKERIES—Retail & Wholesale.....	18	89.00	11.00	GOVERNMENT—State & County.....	22	100.00	.....
BEVERAGE DISTRIBUTORS.....	10	100.00	.....	GOVERNMENT—Federal.....	12	91.67	8.33
COAL, COKE & ICE.....	4	100.00	.....	GOVERNMENT—Municipal.....	22	100.00	.....
COMMON CARRIERS—Over-the-road.....	15	20.00	80.00	INDUSTRIAL—Local and Over-the-road.....	4	100.00	.....
COMMON CARRIERS—Local.....	16	93.75	6.25	LAUNDRY & DRY CLEANING.....	8	100.00	.....
COMMON CARRIERS—Local and Over-the-road.....	15	66.67	33.33	NEWSPAPERS.....	2	100.00	.....
CONSTRUCTION—Builders, Quarries, Gravel.....	8	87.75	12.25	PETROLEUM DISTRIBUTION.....	5	100.00	.....
DAIRIES—Retail & Ice Cream.....	15	80.00	20.00	PETROLEUM PRODUCTION.....	3	66.67	33.33
DEPARTMENT STORES.....	3	100.00	.....	PUBLIC UTILITIES—Gas, Water, Power.....	14	92.86	7.14
FOOD DISTRIBUTORS—Over-the-road.....	13	69.23	30.77	PUBLIC UTILITIES—Telephone.....	12	83.33	16.67
FOOD DISTRIBUTORS—Local.....	4	75.00	25.00	TRUCK RENTAL.....	6	100.00	.....
FOOD DISTRIBUTORS—Local and Over-the-road.....	6	100.00	.....	TRUCK & BUS FLEETS—Mixed.....	7	100.00	.....
				TOTAL & AVERAGE for All Vocations.....	244	86.07	13.93

Table 2A. While majority of fleets insist on being notified when road failures occur, not all handle all road re-

pairs. Many permit certain minor repairs to be handled locally. This fact is brought out more fully in Table 2B

While some fleets authorize road failure work to be done at "the nearest service available," it must not be construed that they don't care who does the work. Table 3 shows, vocationally, which fleets use outside service in addition to their own, to handle road failure repairs.

In the effort to obtain reputable road failure service, fleets have not limited themselves to one or two contacts. In the compilation of Table 3 it was hoped the data would show some trend or preference as to outside facilities employed. A preference was shown, but it was impossible to tabulate. The preference was for a combination of available facilities. Tabulation was not possible because of the great diversity of such combinations. Proximity and type of repair seem to be the factors governing the use of a combination of available facilities.

When a road failure warrants the attention of a fleet's own shop, an equally wide variety of handling is indicated by the data contained in Table 4. The shop superintendent or foreman may dispatch a mechanic with or without a helper, depending

Typical Instructions Fleets Give Drivers for Handling Road Failures

Table 2B With emphasis on the conditions under which drivers may handle own repairs

"Phone in immediately, giving location and nature of failure so that shop can determine if job can be done on the road, what parts and tools will be needed, and if helper will be needed or if substitute vehicle should be sent out."

"Don't touch trouble. Call garage."

"We have driver call dispatcher to report delay. Dispatcher will transfer the call to the shop, and we try to get all needed information. We then call dispatcher back and try to give him some idea how long truck will be delayed."

"We go out only in case of accident. Driver is instructed to call in and we tell him, if we can, where to get service. Driver is instructed to call in periodically to report progress of work, and to call in when the job is finished."

"Driver is requested to follow ICC procedure for safety, then 'phone office and advise, as well as he is able, what the trouble is. Then we either go out or authorize work done nearby."

"Call office for instructions."

"Minor failures, such as dead batteries or flat tires, are taken care of where convenient. In case of serious trouble with the engine, clutch, transmission or rear, drivers 'phone office for instructions."

"Endeavor to obtain repair close by. In event this is impossible, call in and garage will send necessary parts, materials and mechanic to effect repair on spot, or we may send a tow truck and haul in disabled vehicle."

"Get in touch with the shop foreman immediately."

"If failure is minor, drivers call the garage for permission to have repairs made locally. If major, a tow truck is sent out with an extra truck to transfer the load."

"Local and suburban routes call our garage. Country routes and over-the-road drivers secure repairs, if possible; if not, we service them."

"Have repair made where convenient, if job time is under one hour; if over, call shop."

"If minor failure, costing \$5 or less, drivers are authorized to have repair made on the spot. Above this, they 'phone the shop for instructions."

"All road failures are to be reported promptly to the shop superintendent."

"This is our procedure: (A) Drivers are equipped with basic tools for minor repairs. (B) They carry a list of reputable shops along the route, which are contacted for minor work beyond the driver's ability. (C) Call shop supervisor for advice or mechanic, if needed."

"Drivers are instructed to wait for next truck, as on our logging roads trucks are not far apart and they have to pass shop."

"Call office or go to nearest service station and get fixed up."

"We post telephone number of garage in truck cab. Drivers are instructed to call this number for service."

"Driver is instructed to call the nearest authorized dealer. Arrangements are made with dealers when route is started."

"Call nearest branch or, on long hauls, call nearest garage."

"I try to choose drivers who have had mechanical experience. All our drivers do minor repairs. When repair is beyond driver we send out mechanic."

"Call nearest company branch or dealer of truck you are driving. Advise home office of result."

"If long distance, we have local garage check trouble. If trouble is minor, local garage is authorized to make repair. If trouble is major, we tow truck into our garage."

"We always have driver call in. Sometimes we can instruct drivers what to do to get going."

"Contact shop or traveling mechanic, whichever is nearer."

"Since our operation is local city runs, we have driver 'phone in if the truck is not working right or, if nearby, to come direct to the shop before trouble results in a breakdown."

"We have drivers 'phone in for another truck as, in our business (newspaper delivery), driver cannot wait around until car is fixed, unless it is some minor job that can be done quickly."

"'Phone nearest branch. (We have 78.)"

"Call shop as soon as truck starts to misbehave."

"For minor repairs, get word to nearest garage and pay for job. If work requires long distance tow and major repairs, call shop."

"A central calling point has been established to report failures."

"Each driver is required to use individual initiative, according to conditions."

"Use two-way radio or nearest telephone to notify garage."

"Get help as near and as fast as you can."

"Outside city call nearest repair shop. Inside city call shop foreman."



Fleets Use Own and Outside Facilities for Road Service

46.83% use own shops exclusively, 53.17% use own or outside facilities, as expedient

Table 3

upon conditions, in a passenger car, a tow truck, a standard truck, or a special service truck—which may be a utility, pickup or a light panel job equipped with hand tools, jacks, chains, an assortment of parts, etc. A few fleets also have completely equipped mobile shops capable of doing practically anything that the fleet shop can do, short of engine rebuilding.

Of the fleets reporting, 45.78 per cent use not just one but a combination of road service vehicles. Because of the great diversity of combinations, it was not possible to tabulate them. However, it seems that the tow truck is a basic piece of equipment around which most combinations center. In addition, fleets may maintain a special service truck, or they may press a passenger car or a standard truck into road service. The nature of the road failure seems to be the deciding factor.

Usually, it is only the larger fleets that use more than one type of vehicle for road failure service. Of the fleets that maintain only one vehicle, the standard truck seems to have an edge over other vehicles in use.

(TURN TO NEXT PAGE, PLEASE)

VOCATION	Fleets Reporting	Own Facilities Exclusively	Own Plus Outside Shops
BAKERIES—Retail & Wholesale.....	21	61.90	38.10
BEVERAGE DISTRIBUTORS.....	10	70.00	30.00
COAL, COKE & ICE.....	4	75.00	25.00
COMMON CARRIERS—Over-the-road.....	15	13.33	86.67
COMMON CARRIERS—Local.....	18	66.67	33.33
COMMON CARRIERS—Local & Over-the-road.....	15	20.00	80.00
CONSTRUCTION—Builders, Quarries, Gravel.....	8	37.50	62.50
DAIRIES—Retail & Wholesale.....	16	37.50	62.50
DEPARTMENT STORES.....	3	.....	100.00
FOOD DISTRIBUTORS—Over-the-road.....	13	15.38	89.62
FOOD DISTRIBUTORS—Local.....	5	60.00	40.00
FOOD DISTRIBUTORS—Local & Over-the-road.....	6	16.67	83.33

Table 3. A variety of outside emergency service facilities are being employed by fleets to implement own organization. Included are the truck factory

VOCATION	Fleets Reporting	Own Facilities Exclusively	Own Plus Outside Shops
GOVERNMENT—State & County.....	23	69.57	30.43
GOVERNMENT—Federal.....	12	50.00	50.00
GOVERNMENT—Municipal.....	22	72.73	27.27
INDUSTRIAL—Local & Over-the-road.....	4	50.00	50.00
LAUNDRY & DRY CLEANING.....	8	87.50	12.50
NEWSPAPERS.....	2	100.00	.....
PETROLEUM—Distribution.....	5	.....	100.00
PETROLEUM—Production.....	3	.....	100.00
PUBLIC UTILITIES—Gas, Water, Power.....	14	50.00	50.00
PUBLIC UTILITIES—Telephone.....	11	.....	100.00
TRUCK RENTAL.....	6	.....	100.00
TRUCK & BUS FLEETS—Mixed.....	8	87.50	12.50
TOTAL & AVERAGE for All Vocations.....	252	46.83	53.17

branch, truck or car dealer, a particular independent repair shop or any independent shop. They may use one of these facilities or any combination

Service Units Fleet Shops Use for Handling Road Service Calls

Table 4

Most fleets use more than one type of vehicle for making road service calls

Service Units								Service Units							
A B C D E								A B C D E							
VOCATION	Number of Fleets Reporting	Mechanic in Passenger Car	Mechanic in Special Tow Truck	Mechanic in Regular Truck	Specialty Equipped Service Truck	Mechanic in Special Mobile Shop	Combinations	VOCATION	Number of Fleets Reporting	Mechanic in Passenger Car	Mechanic in Special Tow Truck	Mechanic in Regular Truck	Specialty Equipped Service Truck	Mechanic in Special Mobile Shop	Combinations
		% Using Method	% Using Method	% Using Method	% Using Method	% Using Method	% Using Method			% Using Method	% Using Method	% Using Method	% Using Method	% Using Method	% Using Method
BAKERIES—Retail & Wholesale	18	.....	16.67	50.00	11.11	.....	22.22	GOVERNMENT—State & County	20	10.00	5.00	10.00	20.00	.....	55.00
BEVERAGE DISTRIBUTORS	10	10.00	10.00	.....	40.00	.....	40.00	GOVERNMENT—Federal	12	8.33	16.67	.....	16.67	.....	58.33
COAL, COKE & ICE	4	.....	25.00	25.00	25.00	.....	25.00	GOVERNMENT—Municipal	18	11.11	33.33	11.11	11.11	5.56	27.78
COMMON CARRIERS—Over-the-road	14	7.14	14.29	21.43	7.14	.....	50.00	Industrial	4	25.00	.....	25.00	25.00	.....	25.00
COMMON CARRIERS—Local	16	18.75	18.75	6.25	6.25	12.50	37.50	LAUNDRY & DRY CLEANING	8	.....	25.00	62.50	.....	.....	12.50
COMMON CARRIERS—Over-the-road & Local	14	7.14	7.14	14.28	14.29	.....	57.14	NEWSPAPERS	2	.....	.....	50.00	.....	.....	50.00
CONSTRUCTION—Builders, Quarries, Gravel	9	.....	22.22	11.11	11.11	11.11	44.45	PETROLEUM—Distribution	4	.....	.....	.....	.....	.....	100.00
DAIRIES—Retail & Wholesale	14	7.14	21.43	7.14	.....	7.14	57.15	PETROLEUM—Production	3	33.33	33.34	.....	33.33	.....	.....
DEPARTMENT STORES	3	.....	66.67	33.33	.....	.....	.....	PUBLIC UTILITIES—Gas, Water, Power	12	16.67	8.33	33.33	.....	.....	41.67
FOOD DISTRIBUTORS—Over-the-road	11	.....	18.18	.....	.....	.....	81.82	PUBLIC UTILITIES—Telephone	8	.....	.....	25.00	12.50	.....	62.50
FOOD DISTRIBUTORS—Local	2	.....	.....	.....	50.00	.....	50.00	TRUCK RENTAL	6	33.33	.....	16.67	.....	.....	50.00
FOOD DISTRIBUTORS—Over-the-road & Local	6	16.66	.....	16.67	16.67	.....	50.00	TRUCK & BUS FLEETS—Mixed	7	14.29	14.29	.....	.....	.....	71.42
								TOTAL & AVERAGE for All Vocations	225	8.89	15.11	16.89	11.11	2.22	45.78

Table 4. Of the fleets that maintain only one type of vehicle for road service calls, a regular truck has a slight edge over a tow truck. However, most

fleets have more than one type of vehicle available for road work. These may be of a special service type, such as a tow truck or a fully-equipped ser-

vice truck, or they may be of a standard type such as a passenger car, truck or tractor. Usually, the larger the fleet, the more varied are the vehicles in use

Fleets Make Only Minor Repairs and Replacements on the Road

Table 5

Usually, only mechanic's hand tools and needed parts are taken on service calls

SERVICE UNIT	VARIETY OF SERVICE HANDLED	TOOLS	PARTS AND SUPPLIES
A Mechanic in Passenger Car	All minor repairs, adjustments and replacements 1. Start stalled vehicles 2. Replace defective parts (electrical, fuel system, tires and axle shaft) 3. Adjust units of electrical system, fuel system, brakes and power train 4. Light towing 5. Supply gas and oil	Complete set of mechanic's hand tools, plus jacks, tow bar, chains, plus any special portable tools needed	Usually only parts and supplies required for particular failure repair. Few fleets include ignition and fuel pump repair kits
B Mechanic in Special Tow Truck	A wide variety of repairs Two to own shop if not easily repaired on road. Also tow wrecks Few fleets make heavy unit replacements, such as rear and transmission	Complete set of mechanic's hand tools, heavy tools, jacks, tire chains, welding equipment, tow bars, chain or block and tackle, winch, flags and flares, pulpers, grease buckets and guns	Supply of gas and oil, replacement parts kits, small parts known to fail frequently, such as fuel pump diaphragm. Also complete replacement units: Carburetor, fuel pump, distributor, etc. In addition, other units, such as rear ends, are taken if the nature of failure warrants
C Mechanic in Regular Truck	Minor repairs similar to that handled by Unit A If repairs cannot be made quickly and conveniently load is transferred from disabled to sound vehicle and driver proceeds according to schedule or disabled vehicle is towed to own shop	Complete set of mechanic's tools and equipment similar in that carried by Crew A. Few fleets also carry welding equipment	Usually only parts required for particular repair. Some fleets also include special service call kits containing most frequently needed parts or replacement units
D Specialty Equipped Service Truck	Great variety of repairs	Wide assortment of regular and special tools. Also, safety equipment, chains, heavy-duty jacks. Some also contain welding equipment, air compressor, grease guns, testing equipment, etc.	These units carry a large stock of standard parts, replacement units, gaskets, wiring, tubing, extra fuel, lubricants, etc.
E Mechanic in Special Mobile Shop	Any repair, adjustment and replacement possible on road side	Wide assortment of regular and special tools. One fleet labels this unit as a "travelling machine shop." Also much special equipment such as compressors, welding equipment, small lathe, testing equipment, etc.	These units are well stocked with practically every automotive part and supply item used by truck fleets. They are practically self-sufficient

... ROAD FAILURES

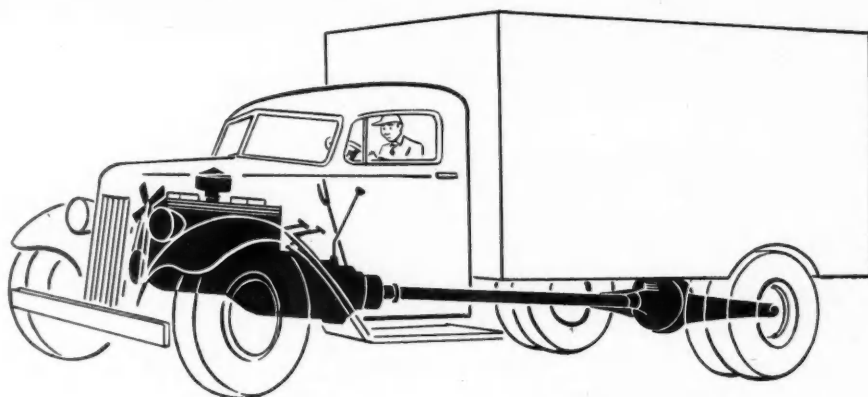
(CONTINUED FROM PAGE 51)

A tabulated summary of how the standard truck and other individual vehicles are used, the type of road failure service they

are called upon to do, and the tools and parts they generally carry on road failure calls, will be found in Table 5.

The one outstanding conclusion gained from Parts 1 and 2 of this Road Failure Survey is that fleet maintenance has reached a new high in efficiency. PM

programs to combat road failures are an accepted standard of maintenance. Nobody wants to be plagued with road failures, but, when they happen, fleet maintenance men are better equipped to handle them efficiently than ever before in the history of truck transportation.



Power Train Series No. 1

Transmission Troubles

Listing causes and cures of such transmission troubles as excessive noise, gear failure, hard shifting, overheating, and oil leakage

IT WILL BE THE AIM of this article to discuss power train failures from the standpoint of noticeable noises characteristic of worn assemblies—but it must be remembered that noise itself is relative and absolute silence an impossibility where gears run together. The trained mechanic will apply the suggestions for trouble shooting noise, premature wear or vibration to suit the individual situation, realizing any one of these conditions may be caused, or the result of, nearly any unit in the power train system. A process of elimination, using this material as a guide, will enable the mechanic to follow a step-by-step trouble shooting routine which will work well in any shop.

Outside Noises

IT IS SAFE to say that most noises apparently in the transmission really originate outside the unit. In many cases the transmission simply serves as a sounding board for noises

by M. K. SIMKINS

Technical Editor,
Commercial Car Journal

telegraphed from other worn units. Worn assemblies allow any vibration in the propeller shaft, clutch, rear end or even the engine to be set up in this unit. Operating clearances or back lash present in all gears will allow out-of-balanced or misaligned assemblies to bounce or flutter and result in gear noise difficult to locate. The drum-like case amplifies and releases these noises so that the transmission gets the blame for the condition.

Torsional vibration, one of the most frequent causes of noises originating outside the transmission, is due to an unbalanced power train assembly and may be caused by defective units anywhere between the engine fan and the axle shaft.

Transmission noises due to engine torsional periods occur at definite

speeds and are not apparent throughout the entire speed range. Torsional transmission noises are usually a high-pitched, high-frequency, metallic sound, sometimes appearing as a beat or rattle. In locating torsional vibration the mechanic should operate the truck on the lift or on the dynamometer under both power and coasting, in each combination of gear positions including neutral—while observing at what road speeds the noise and vibration is most pronounced.

An out-of-balanced fan will produce vibration only at very high engine speeds. Fan balance can be checked by slipping off the belt and noting static and dynamic balance. The engine torsional damper, if defective, will usually cause vibration at relatively low road speeds (20 m.p.h.), but if springs are defective in a spring-loaded unit, vibration may not show up until a high r.p.m.

An out-of-balance crankshaft, flywheel and/or clutch plate will produce (TURN TO NEXT PAGE, PLEASE)

Power Train Failures

(Continued from Page 53)

duce engine vibration at low speeds, as the engine will smooth out when the r.p.m. is increased. Generally trouble with flywheels is attributed to loose mounting bolts, and clutch pressure plates give trouble when parts are installed incorrectly or when springs, bolts, washers, etc., have become loosened and have been thrown out of the assembly.

Propeller shaft runout can be located while the truck is operating on the lift. A worn propeller shaft yoke can be detected by prying on the unit with a pry bar as can a worn rear transmission bearing. The same procedure will locate a worn rear pinion bearing and defective universal joint crosses.

Balance of the propeller shaft may be difficult to check, but inspection will show worn or sprung parts, worn bearings and alignment of the yoke with the mainshaft. Unbalance can be detected by chalking high side, adding clip weights under bolt heads opposite and noting any improvement.

Misalignment of the rear end due to a sprung axle shaft, dislocated rear end or misaligned rear wheels may cause excessive power train noises. Measurement with a tracking gage, tram rod, frame gages and wheel aligning instruments will disclose whether the frame is sprung or the wheels are out of alignment—all factors contributing to power train noises.

An out-of-balance drive shaft will permit enough whip in the train to show up in a noisy transmission. It may be necessary, in running down the source of the vibration, to remove the emergency brake drum and run without it on a test to see if this is the troubling unit.

Rear axles can contribute to a noisy transmission. Worn bearings and gears, improper bearing and pinion adjustment, sprung or loose axle shafts and wobbly rear wheels will produce a sound seemingly arising from the transmission. Similarly, a loose clutch or wear in the clutch plate splines will produce a noise.

And as a final resort the mechanic should consider the possibility of a

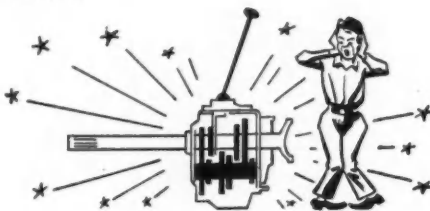
loose cab or a cab riding the breather cap of the transmission or transfer case, a factor which would result in an apparently noisy transmission.

Heavy tires, if unbalanced, wobbly or mismatched, can transmit vibration and noise to the transmission. All rear tires should have the same loaded radius, because any difference will result in "tire fight," causing the whole power train system to set up stresses. Since radius of a tire varies with make, type, tread, tread thickness, load and inflation, actual measurement of the circumference under loaded conditions will be the most accurate check.

Worn spring pivot bearings, since they carry all of the load imposed on the rear axles, will shift sideways and permit the axle spring seats to rub the frame, and a noisy condition will result.

Loose spring U-bolts and wear in the pivot bearings will allow side shift and a resultant misalignment of the rear axle. These conditions should be checked before any particular unit is blamed for power train vibration and noise.

Worn torque rods, deteriorated bushings and misalignment of the rods will contribute to the same condition.



Transmission Noise

A TRANSMISSION is not commercially quiet when its operation is characterized by certain distinctive types of noise. The conditions inside the transmission contributing to noise can be enumerated as follows:

1. Gears out of round or eccentric with the center-line of the shaft on which they are mounted.
2. Bumps, burrs and swells on the operating gear teeth.
3. Improperly matched gears having poor tooth bearing.
4. Shafts out of line.
5. Faulty or damaged bearings.

Gears Out of Round

This condition results from imperfect cutting of the teeth or a few rough teeth. The noise can be described as a howl which occurs intermittently with each revolution of the shafts as the teeth on the high side of the offending gear approach and pass the teeth on the mating part. On a practical basis, eccentric gears may also be identified by the vibration which they set up.

Bumps, Burrs and Swells

Gear teeth carrying these defects will operate with a knocking or thudding sound which also varies with the speed of the engine. The noise appears intermittently as the damaged teeth approach and pass the teeth on the corresponding mating part.

Improperly Mated Gears

The noise resulting from gears having poor tooth contact is usually a high pitched howl or whine. The cause can easily be identified by examining each set of gears to determine if the tooth bearing is uniform and spread evenly over the length of each tooth.

Shafts Out of Line

Misalignment between the countershaft and mainshaft will usually result in a noise similar to that produced by eccentric gears. In fact, the condition which gives rise to the noise is identical. Shafts may be out of line either by an error in the bores of the transmission case or by either or both shafts being sprung in operation.

Faulty and Damaged Bearings

Bearing noise is usually identified by a high pitched squeal and is ordinarily associated with bearings having insufficient axial or radial clearance. Bearings with defective balls or pitted and spalled races will produce a knock or thud similar to that resulting from bumps and burrs on the gears.

Other Causes of Noise

Another point which is often overlooked by the mechanic is the fact that you cannot in most instances, secure a quiet operating transmission when installing new gears with old mating parts. Manufacturers recommend that when replacing broken or

TROUBLE SHOOTER'S CHECK LIST

I. NOISE ARISING IN NEUTRAL

Misalignment of transmission
Worn transmission pinion bearing
Scuffed gear tooth contact surfaces
Worn, scored countershaft bearings
Defective second speed mainshaft gear bushing
Unmatched constant mesh gears
Worn, rough reverse idler gear
Eccentric countershaft gear assembly
Sprung or worn countershaft
Excessive backlash in constant mesh gear
Excessive end play in countershaft, reverse idler, pinion
Worn mainshaft pilot bearing
Scuffed gear tooth contact surface
Insufficient lubrication
Incorrect grade of lubricant

II. NOISE ARISING IN GEAR

Worn, rough mainshaft rear bearing
Sliding gear teeth rough, chipped, tapered
Excessive second speed mainshaft end play
Noisy speedometer gears
Conditions under No. I

III. NOISE ARISING OUTSIDE

Out-of-balance fan
Defective torsional damper
Out-of-balance crankshaft
Out-of-balance flywheel
Unbalanced clutch assembly
Loose transmission mounting
Loose engine mountings
Worn universal joints
U-joints improperly installed
Misaligned, sprung driveshaft
Incorrect driveshaft assembly

IV. DIFFICULT SHIFTING

Improperly operating clutch
Sliding gear tight on shaft splines
Insufficient chamfer of sliding gear teeth
Buried mainshaft splines
Misaligned mainshaft
Damaged synchronizing unit
Improper adjustment of shifting linkage
Worn shifter rails
Worn, sprung shifter fork

V. STICKING IN GEAR

Improperly operating clutch
Insufficient chamfer on detent ball notches
Sliding gear tight on mainshaft splines
Misaligned mainshaft
Improper linkage adjustment

VI. SLIPPING OUT OF HIGH

Misaligned transmission
Worn pinion gear teeth
Worn clutch sleeve gear teeth
Insufficient tension on detent balls
Too much chamfer on detent ball notches
Improper linkage adjustment

VII. SLIPPING OUT OF SECOND

Excessive clearance between second speed gear and mainshaft
Excessive end play of second gear on mainshaft
Worn second speed clutch gear teeth
Excessive chamfer on detent ball notch
Weak detent ball springs
Improper linkage adjustment

VIII. SLIPPING OUT OF FIRST

First and reverse sliding gear loose on mainshaft splines
Sliding gear teeth worn or tapered
Worn, misaligned mainshaft splines
Worn countershaft first speed gear
Excessive end play of reverse idler
Insufficient gear mesh
Too much chamfer on detent ball notch
Worn shift lever lock ball notch
Improper linkage adjustment

IX. LOSS OF LUBRICANT

Lubricant level too high
Damaged or improperly installed gaskets
Damaged or defective oil seals
Defective oil throw rings
Loose drain plug, transmission cover
Cracked transmission housing
Use of excessively foaming lubricant
Stopped up transmission breather
Worn mainshaft bearings

X. BEARING FAILURES

Use of wrong type, grade of lubricant
Securing too tight or too loose bearing adjustments
Improper assembly of the unit
Lack of cleanliness in unit overhaul
Improper shifting of gears
Excessive overloading of vehicle
Lugging of engine in too high a gear
Foreign particles in transmission

worn gears, the mating gear also be replaced, and when replacing sliding gears it is usually best to also replace the main shaft.

Premature Gear Wear

EXCESSIVE gear wear and gear tooth failures are found in four types:

Clash, destruction of the ends of the teeth due to poor shifting.

Tooth breakage, due to overload (or possibly to lugging the engine.)

Tooth face wear, at the pitch line or mid-height. This is also due to overloads or lugging. Spalling or pock marks commonly occur.

Galling or roughening of the tooth

tip and root. This may be due to poor lubrication, or to considerable wear of the tooth face. This wear will occur at the mid section and cause more load on the tip and root, leading to galling or burning.

Often failures (3) and (4) will show on the same gear, but actually one type failure preceded and caused the other.



Gear Jumping

THERE are many factors which may cause the transmission to slip out of gear. These can be identified by the conditions under which the slip-out occurs. Since it is extremely difficult to test a unit mounted transmission with the controls disconnected, it is for the most part necessary to disassemble the transmission to determine a specific cause. In an auxiliary unit the controls may be disconnected and the transmission tested under load. If slipout occurs under this situation, the trouble can be found in the transmission. If not, the trouble can be found in the remote control assembly or the linkage by which it is attached to the auxiliary.

If the trouble is in the transmission, it can result from loose or worn shifter forks, worn or damaged shifting rails or weak poppet springs. Sprung shifting forks may also be a contributing factor to worn and tapered engaging gear teeth which are prone to come out of mesh. In constant mesh gear sets slip-out difficulty may result from excessive radial or axial clearance in the mainshaft gear. Bearings with excessive radial and axial clearance are also contributing factors. In the lower ratios of unit mounted transmissions loose fitting sliding members are prone to walk out of mesh under heavy load. Fits between shafts and sliding members should be free but not "sloppy."

High Temperature Conditions

EXCESSIVE heat in the transmission, as well as in the final drive and transfer case is hard to determine but fortunately seldom experienced.

(TURN TO NEXT PAGE, PLEASE)

Power Train Failures

(Continued from Page 55)

A unit of this type can be too hot to touch and still be well within normal operating temperature range for heavy-duty service. High temperatures are not uncommon under severe operating conditions.

Extremely high temperatures can possibly be due to poor lubrication, that is, too little lubricant, too much, or the wrong type for the particular operation. It may be due to misalignment of any of the bearings or gears in the assembly, when excessive power losses are converted into heat which must be dissipated to the air through the case.

It is safe to say that the operator need not consider overheating unless the paint is burned off the case—as long as the assembly seems to be free from binding and contains the right amount, type and kind of lubricant. Only after new oil seals have been installed—before they have had a chance to wear in—need the operator worry about excessive heating of the transmission or the differential, according to manufacturers.

Bearing Failures

IMPROPER servicing, one of the biggest causes of bearing failures, can be easily controlled. Since 90 per cent of ball bearing failures are caused by dirt, cleanliness in the service, proper cleaning, and assembly of the bearings should provide many additional miles of satisfactory operation. Inspection during the service will show causes of premature failures.

Bearings operated in the presence of dirty oil will have excessive amounts of axial and radial clearance. The color of the balls and ball tracks will be dull gray, which results from the lapping action of the abrasive in the oil.

Pitting in the ball tracks can be attributed either to the circulation of metal chips thru the bearing or an overload which has caused premature failure of the ball track surface.

Oxidized lubricant on the ball retainers and races can easily interfere with the free-rolling action of the balls. If the balls become clogged

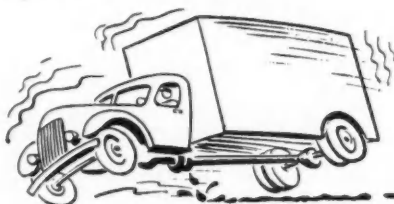
with oxidized lubricant, they will scrape along the ball track instead of rolling as intended by the manufacturer. Spalled surfaces may thus result.

Bearings discolored and dark have either been operated in the presence of too little lubricant or possibly have been manufactured with too little clearance. The darkened appearance results directly from heat generated from the operation of the bearing.

Rust spots on balls, retainers or races usually result from water in the lubricant introduced through condensation. It is not advisable to remount bearings rusted in this manner because they are predisposed to early failure through spalling and pitting of the individual parts.

Bearings scored on the inside diameter indicate a loose fit between the shaft and the inner race. Bearings scored on the outside diameter have been installed in oversize bores. This condition can also result from a clogged bearing which is forced to turn in its bore.

Fractured inner and outer races usually result from improper mounting, first by cocking the bearing on the shaft and second from attempting to install the bearing on a shaft on which the seat is oversize.



Transmission Oil Leaks

ODDLY enough, the most common cause of oil leakage from the transmission is too high a lubricant level. Most cases require that the lubricant be kept at the filler hole level, yet some mechanics are tempted to add extra just for good measure. The churning of the gears will throw the oil through the bearing retainers. Most units have breathers or pressure relief valves which should be inspected periodically and kept open since high temperatures combined with high speeds, will produce a pressure in the assembly and will cause the lubricant to be forced out at the shaft bearings if the unit is air tight. Use of a lubricant which foams easily will show up in leakage because of this.

Other causes of leakage are evident. Worn retainers, worn bearings which will cause defective retainers, damaged or missing oil slingers and loose cover plates and gaskets all will permit lubricant to escape.

Driver Responsibility

FREQUENT overhaul and replacement of parts can many times be traced directly to the driver.

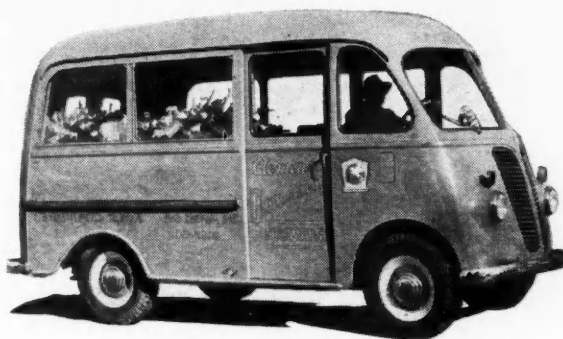
When driving down grade the driver should leave the transmission in gear and the clutch engaged. Coasting with the transmission in neutral or with the clutch disengaged permits mainshaft speeds so far in excess of those encountered during normal operation that a definite lubrication problem arises. The countershaft gears driven by an idling engine do not provide a sufficient pumping and circulating action to deliver oil to the mainshaft which, being driven by the ring gear of the axle, is turning in the mainshaft gears at excessively high speeds. Under this situation costly bushing seizures or needle bearing failures may result.

If the clutch is engaged when the vehicle is coasting in gear at high road speeds, the abrupt deceleration resulting from engine inertia and compression will abnormally shock not only the transmission gears but also the remaining members of the drive line. The excessive strain applied in this manner may result in either immediate or ultimate drive line difficulty.

When starting either a new transmission or one which has been exposed to cold weather, allow sufficient idling time for the lubricant to warm, circulate and coat all surfaces of gears, shafts and bearings. The driver should shift in and out of each ratio several times before putting the vehicle in motion and before using it under load. The warm-up period and the shifting is recommended because lack of initial lubrication may cause metal-to-metal contact between moving parts with resultant damage and loss of operating time.

When the rpm drops to negotiating a long upgrade, the transmission should be shifted to the next lower ratio. This will permit the engine to run at the recommended operating range. Lugging on hills with heavy loads will result in premature failures.

by **JOHN QUINN**



A CONTROLLED temperature installation for the inside of panel trucks and other small enclosed delivery units has been worked out for Clemens Florist of Kansas City, Kan., by its owner, R. R. Derricott.

A long-standing problem for florists has been to devise a means of transporting flowers which will deliver them to the patron's door as dewy-fresh and lively-looking as when they left the designing room or the greenhouse. In solving this problem for his own business, Mr. Derricott has devised an installation which can serve as well for other small delivery units for short hauls of dairy products, meats, frozen foods, bakery products, candy, vegetables and other perishables.

The sprays, wreaths and special floral designs which make up the majority of florists' deliveries require more bulk area than the average package for delivery. For that reason Mr. Derricott sought both a unit with a large cubic foot area and a cooling arrangement for the large area. The more frequently used methods such as brine tanks, dry ice with circulating fans and other devices were not acceptable for this purpose.

Mr. Derricott began by selecting a unit in the half-ton, long-wheelbase

Temperature Control Built Into Half-Ton Delivery

**Florist installs automatic cooling
and air-circulating system to keep
body temperature at uniform 50 deg.**

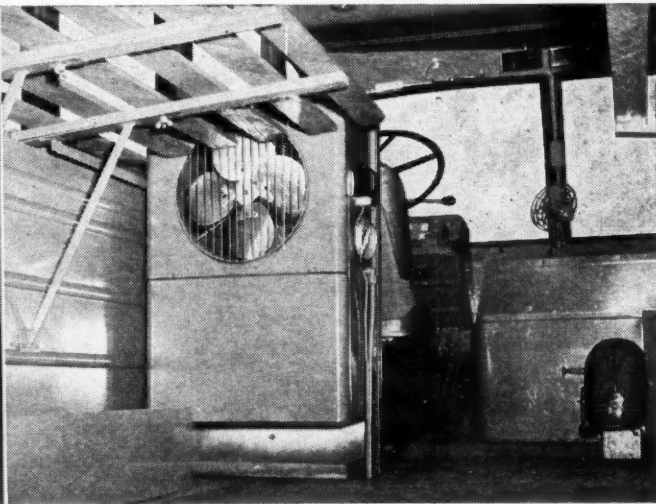
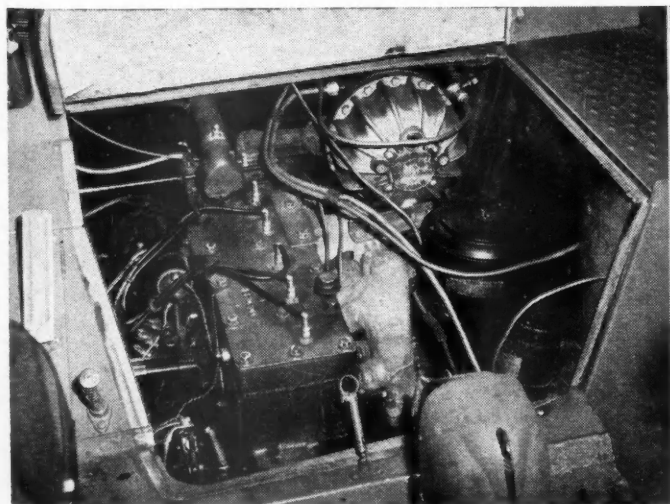
(113 in.) size as the truck which would give him additional carrying capacity for the bulky flowers. Since the weight of the flowers is negligible, the truck's load actually would consist of little more than the cooling equipment, and for that reason the lighter, half-ton chassis was chosen.

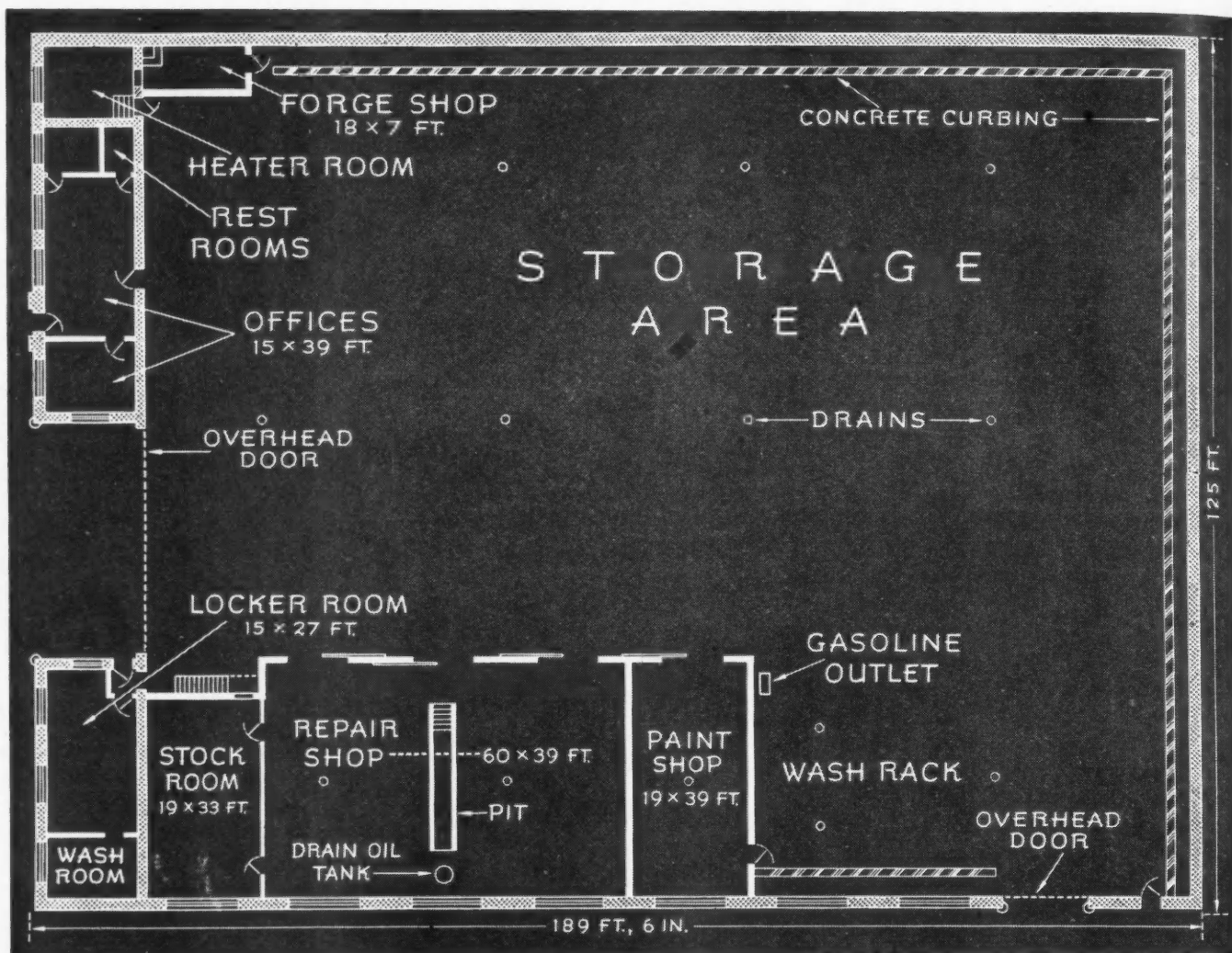
Air Cooling Required

MERE COOLING was called for rather than low-temperature refrigeration, since the flowers are kept in the truck for only a short time while enroute on delivery. The basis of the cooling system was a one-ton
(TURN TO PAGE 136, PLEASE)

Mounted on adjustable brackets, rotary compressor is driven by V-belt over special pulley on fan shaft

Suction fan forces warm air over coils below it and out through lower duct. Note heater at right

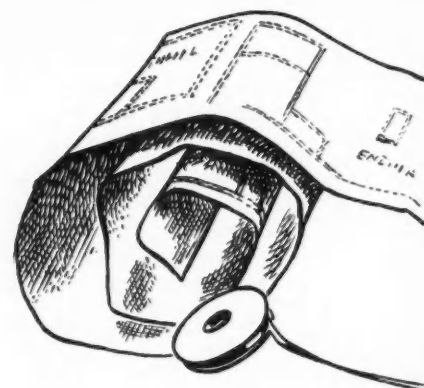




Floor plan of Norman Transportation Lines' new shop-garage reveals clean lines, unbroken traffic flow between doors and adequate space for all operations. A section of stock room has been cut off for tire storage and repairs

SHOP-GARAGE

**Tailored to Service
and Storage Needs**



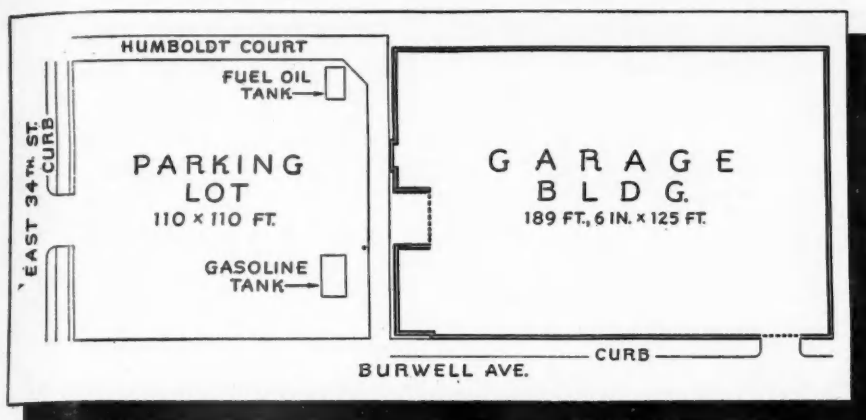
▼ WHILE MOST FLEET operators are still in the dreaming, planning, excavating or just plain "sweating" stage with regard to their new shop layouts, Norman Transportation Lines, Inc., of Cleveland, has its new building in operation. *How* the company got it—the materials, the labor, the courage—is entirely beyond the scope of this article. But *what* it

got and the manner in which the new building is so perfectly tailored to the needs of the fleet is a story that should be helpful to all and instill in many the unmistakable greenish hues of sheer envy.

Norman Transportation Lines is a contract carrier operation hauling almost exclusively for a large grocery chain. Until recently it was known

as The Dregalla Trucking Co. with shop headquarters in one end of a not-too-impressive building. It operates a fleet of 34 tractors and 58 trailers, the combinations being used in hauling groceries, produce, and perishable foods.

While its war-weary tractors are beginning to show their age, they are still in good condition. Nearly all of



Plot plan shows arrangement of building and parking lot. Direct access is provided to two public Cleveland streets. Although gas tank and pump are outside, fill pipe and meter are inside

**Well-arranged fully-equipped building,
189 x 125 ft., features unsupported
roof, provides complete storage and ser-
vice facilities for contract carrier**



the trailers are modern, well-kept aluminum jobs that should be good for sometime to come.

For its new shop and garage the company set up these specific requirements:

1. Complete service facilities for all tractors and trailers, including mechanical repairs, periodic painting and daily inspections.

2. Inside storage for all 34 tractors.
3. Inside storage for 20 loaded trailers as a protection from both theft and weather.
4. Outside storage for the 38 remaining trailers.
5. Inside gasoline dispensing unit.
6. At least two doors to provide efficiency in handling equipment.
7. No posts inside the garage.

8. Provision for necessary service functions including a 38 x 12 ft. office, heater room, locker room, wash rooms, etc.

How well they fulfill all these requirements may be ascertained quickly through perusal of the accompanying plans.

125-Ft. Roof Span

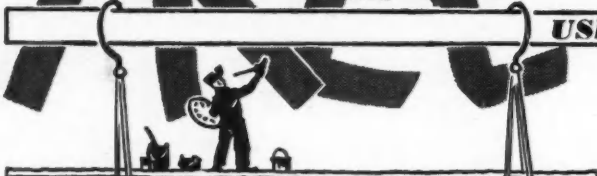
THE BUILDING itself measures 189½ x 125 ft. and the most immediately noticeable feature is the total absence of any supporting pillars or posts of any kind. Even the inside walls separating the shop area, parts room and paint shop from the main garage carry no roof load. If they had there still would have been a problem at the east end where the garage is unbroken. To accomplish the unsupported 125-ft. span required the use of an expensive cantilever-construction roof but the company figured that freedom from obstruction for all the years to come would more than offset the original outlay. The roof itself is of fire proof precast concrete, being assembled in sections. The floor is 7-in. reinforced concrete fitted with 14 drains.

To take much of the "human error" out of the garage's extensive parking area, concrete bumpers are installed at proper positions to precisely adjust for various rear overhangs. Along the entire north wall, these are offset from the wall by 3 ft 6 in. taking care of trailer lengths up to 28 ft. On the east wall the bumper is offset 2 ft. 4 in. to handle normal tractor overhang, and on the south wall between the door and the paint shop the curb is 4 ft. from the wall. Here four 30 ft. trailers may be safely parked.

Just to make sure the garage could handle the parking specified in the qualifications enumerated at the outset, we cut out some paper models, found that the north section would accommodate 16 trailers abreast and the south wall four, accounting for all 20 trailers specified for inside storage. Along the east wall, even with all trailers in position there is room for 20 tractors, stacked two deep and the 14 remaining units may be easily accommodated in front of trailers on the north wall. *

The main part of the building with its cantilever roof, ends at the inner west wall, hence the recessed west (TURN TO PAGE 154, PLEASE)

FREE



PUBLICATIONS

USE POSTCARD — NO STAMP NEEDED

A selected list of the latest in literature — books, pamphlets, catalogs — chosen by the staff to help fleet operators solve maintenance and operating problems. Use the postcard.

L113. Brake Service

Here is a new, 30-page brake manual prepared expressly for the service man as an aid in locating common troubles, diagnosing them and maintaining the braking system at a high level of efficiency.

This illustrated booklet features three phases of brake maintenance. One section is devoted to a check list of common complaints, arranged systematically and providing hints for locating defects such as low brake pedal, spongy pedal, erratic braking, noisy brakes, fading, etc.

The "case history" section includes a number of typical experiences, compiled from the company's reports and showing causes and cures of typical complaints on popular brake assemblies. This section should be highly regarded by the truck mechanic.

The main section of the manual is composed of specific instructions for the disassembly, inspection and adjustment of the brakes on nearly every make of assembly. Instructions cover this phase of maintenance for the Ford, the Huck, the Wagner, the Bendix and the Steeldraulic units, as well as various models of these brakes.

This valuable manual has been made available to the fleet field with the thought that fleetmen can do much to improve the life and serviceability of their brake linings through proper and systematic service. Operators will want to take advantage of this offering and write L113 on the free postcard for a copy.

L114. Lubrication Data

"Dirt is the major cause of bearing failure," says this 16-page manual on lubrication, proceeding with illustrations and drawings to outline the costly results of sludge, dust and engine carbon.

The author suggests three procedures in keeping engines clean: First, a quality oil of low oxidation characteristic should be used. Second, eliminate the causes of dirt entry from the outside, and third, make use of a positive method of removing impurities formed in the oil during use.

The author then outlines basic requirements of a good oil filter. It is recommended that an efficient cleaner use a

material which will absorb and hold all the impurities which may become suspended or solvent in the oil without changing the oil's original characteristics. There should be constant control of the volume of oil passing through the cleansing unit. There should be regulation of the pressure at which the oil can be cleaned efficiently.

All operators are interested in increasing the life of their engines and will welcome the tips presented in this study. For basic, down-to-earth, practical information on increasing engine life, write L114 on the free postcard and secure this data.

L115. Fuel Pump Service

For some of the latest information on fuel pump servicing, here is just the booklet for the shop. This 12-page, pocket-size publication is now ready for distribution to the truck fleet field—is guaranteed to provide valuable information to the mechanic.

In a general approach to fuel pump problems, the booklet discusses such phases of failure as leakage, erratic action, mechanical troubles and parts replacement. Diagrams and drawings help clarify instruction procedures on assembly and disassembly methods. The simple, quick-checks of the pump outlined will enable the mechanic to save a great deal of time when checking this unit.

Since most of the pumps commonly used on trucks operate much in the same way, instructions will cover the two types and can be applied to the operator's own particular make.

The progressive shop cannot afford to be without this handy guide to correct fuel pump service. It is free and your for the writing of L115 on the postcard.

L116. Balanced Lighting

"Balanced Lighting . . . What It Is and Why You Need It," is the subject of a new booklet now available to fleetmen.

Balanced lighting is the analysis and solution of the seeing needs of the men and the supplying of the proper type flexible arm to produce the quality and quantity of necessary illumination. Secondly, balanced lighting dictates that the

proper layout be supplied for general lighting units to supplement the primary lighting of the localities.

These subjects are discussed, in text and through drawings in this 12-page, pocket-size publication—to give the shop owner a better understanding of the requirements of his mechanics and machine operators. Every fleetman should familiarize himself with the mechanics of proper lighting for most efficient production, and will find valuable information here to guide him in lamp selection and location.

This is a scientific, but easily understood approach to a subject of concern to every fleet shop. Write L116 on the free postcard and secure the booklet.

L117. Belt Sanding Data

Two new booklets on belt sanding are now ready for fleet distribution. "Belt Sanding of Metal," is a 12-page, illustrated publication which explains the operation of belt sanding machines, the substitution of an abrasive belt for the grinding wheel and the use of coolants in the operation. Basic instructions show how to polish and grind irregular surfaces on the bench grinder, and how to sand small pieces, while additional information is given for the use of the specialized machines such as the vertical belt grinder. In addition the booklet takes up methods of converting a dry sander for use with an oil coolant.

The other 8-page booklet, titled "The Effect of Moisture on the Work Value of Glue-Bonded Coated Abrasives," covers the storage of coated abrasives, the effect of moisture on them, the effect of humidity on flexibility, and gives a few money-saving suggestions on obtaining longer life from abrasives. Finally, a trouble shooting section points out the usual causes of complaints from ineffective abrasives, with an analysis of the failures and remedial measures suggested for the garage or machine shop.

These data are yours for the asking, just write L117 on the free postcard.

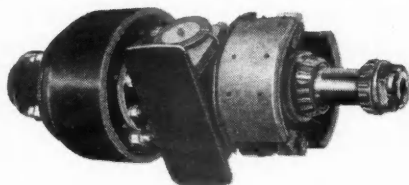
USE POSTCARD — NO STAMP NEEDED

NEW PRODUCTS

The newest in replacement parts, accessories, shop equipment and supplies. For more details of products described and illustrated on these pages, use accompanying free postcard.

P293. New Shuler Axle

The Shuler Axle Co., of Louisville, Ky., is now marketing an improved heavy-duty equipment and machinery trailer axle. This axle is a trunnion-mounted, one-piece, tubular axle answering the requirements for low-bed trailers carrying and moving equipment from job to job over all kinds of highway and "off-the-road" conditions.



The design of this axle allows two axles, each equipped with four wheels, to be mounted in a row across the rear of the trailer, in single or double line, with each axle acting independently of the other.

This axle can be furnished with 12¼-in. diameter brakes permitting the use of 15-in. dual wheels thus insuring the lowest possible distance from the ground to the top of the trailer bed without wheel cut-outs. The axle can also be furnished with brakes for large diameter wheels where desired. Capacities range from 11,000 to 25,000 lb. per axle.

Use Free Postcard For More Details.

P294. Arbor Presses

New arbor presses have recently been developed by the Manley Mfg. Division of American Chain & Cable Co., Inc., York, Pa.

These presses are built to handle jobs up to 3 tons. They are sturdy, easy to operate, mechanical presses. Each are made of one-piece C-type casting. An adjustable handle with a positioning groove permits the rack to be spun down to the work for faster repair work.

There are three types of Manley arbor presses, similar in design but differing in

weight and construction—the AP-3 weighing 130 lb. for column or wall mounting; the APB-3 weighing 135 lb. (illustrated) adaptable for bench use, and the APWS-3 weighing 190 lb.—complete with stand.

Use Free Postcard For More Details.

P295. New Diesel Oil

A new automotive diesel lubricating oil has been announced by Gulf Oil Corp., of Pittsburgh.

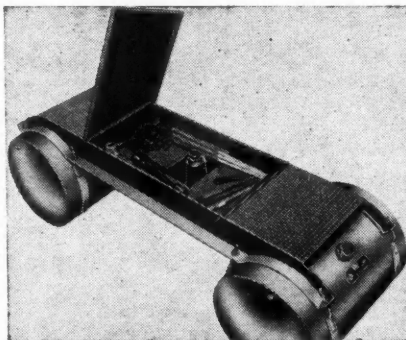
Gulfpride Diesel is a fully detergent oil. It is said to keep piston rings free and will assist in keeping clean internal motor parts.

Offered in five S.A.E. viscosity grades, 10 to 50, inclusive, to provide a proper oil for every automotive diesel engine under all temperature conditions.

Use Free Postcard For More Details.

P296. Safety Tanks

The latest development of the Snyder Tank Corp., Buffalo, N. Y., is the safety tank and tool box unit illustrated. A slip-proof walk 18 x 62 in. is constructed over the tanks, while between the tanks is placed a tool box 38 in. long and 18 in. wide. The tool box and tank supports are



one solid unit, easily installed with four bolts or vibration dampeners which are furnished. A jack well holds the power jack upright, preventing possible escape of fluid. The tool box may be securely locked to prevent theft of contents.

All tanks are safety approved by the Underwriters' Laboratories, Inc.

Use Free Postcard For More Details.

P297. New Fifth Wheel

A new general-purpose A.S.F. Safety 5th Wheel has just been announced. The makers claim that this new "Series 400-C" design will end all mounting-bracket troubles. Between brackets and plates there is more than 26 sq. in. of contact area which carries trailer weight, and transmits tractor power and braking. With their resulting lower unit pressures, and improved lubrication, these brackets are built to last indefinitely.



In addition to a 36-in. size, the Series 400-C wheel also is made in a new 34-in. size for balanced installation on the standard 34-in. tractor chassis—34-in. channel spacing; 34-in. bracket spacing; 34-in. plate width. A mounting plate may be used, but is not required with standard-width truck frames.

Features of previous Safety 5th Wheels are retained in this new design—big bearing-area jaws; the positive lock that cannot uncouple accidentally; shim-control, of end-play; convenient side-operation with lock-position indication; cast-steel construction throughout. Developed by Automotive Division, American Steel Foundries, Chicago, Ill.

Use Free Postcard For More Details.

P298. Flexible Shaft

The flexible shaft machine known as the AristoCraft Power Shaft, recently added to the line of Aristo Power Tools, Inc., Chicago, may be efficiently used for disc and drum sanding, drilling, wire brushing and polishing, as well as grinding. A wide variety of attachments is available for these applications.

The armored casing adds substantially to

(TURN TO NEXT PAGE PLEASE)

NEW

USE POSTCARD — NO STAMP NEEDED

PRODUCTS

(Continued from Page 61)

the life of the shaft by preventing sharp bends. Ample power is provided by the $\frac{1}{2}$ hp. capacitor-type motor.

A new design feature permits lifting the motor assembly from the dolly-stand on which it is mounted. The motor assembly base has four rubber feet to permit standing on bench, floor, or wherever required. *Use Free Postcard For More Details.*

P299. Body Hammer

A new type anvil straightening hammer has been placed on the market by the ABC Mfg. Co., Philadelphia, Pa. With full polished striking face, an elongated head



and a hickory handle, the hammer is particularly adapted to smoothing long flat surface areas around the body. The ends of the long flat surface are slightly recessed to prevent marring of work on flat sur-

faces, the manufacturer has stated.

The hammer weighs 32 oz., is of hardened steel and is precision ground.

Use Free Postcard For More Details.

P300. New Tool Line

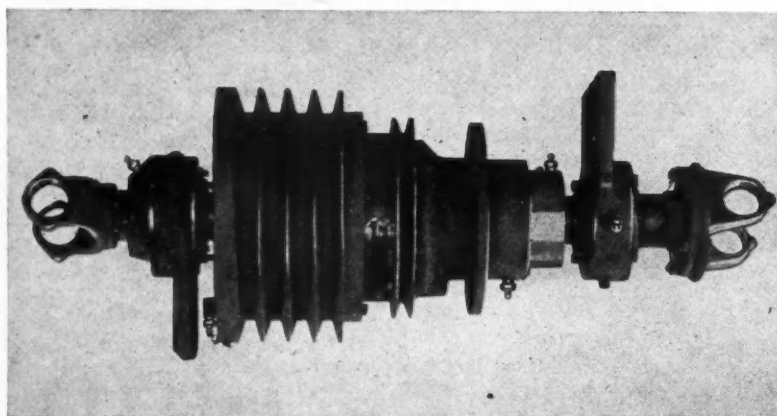
Skillsaw, Inc., recently announced its entrance into the pneumatic tool field with a new line of 28 models. These include pneumatic hammers, drills, screwdrivers, nut runners and die grinders.

The drills, screwdrivers and nut runners are extremely compact and light with no model longer than $7\frac{1}{4}$ in. or heavier than $2\frac{3}{4}$ lb. Engineered and constructed with six ball bearings, improved design rotor and heat treated alloy steel gears and shafts, these tools are said to be ruggedly built to last under severe use.

The pneumatic grinders are available in 3 models, intended for die grinding, burring, rotary filing and use with wire size drills. The pneumatic hammers are available in 3 sizes with 4 models in each size. Offset or grip handles, Parker taper or hexagon nozzles are offered.

Use Free Postcard for More Details.

P301. Belt or Chain Drive Power Take-off



Eight standard models of Davey Heavy Duty Power Take-offs are now available to the fleet field through the Davey Compressor Co., Kent, Ohio.

The new units are designed with an internal and external gear drive, operating as a strong and durable spline (rather than the series of rotating or meshing gears found in transmission type take-offs). Installation is made to the rear of the truck transmission case. The power take-off then becomes an integral part of the drive shaft assembly for transmitting power direct from the truck engine either through V belts or chain drive.

The eight power take-offs are available

in three separate capacities—50, 75 and 100 h.p., so designated because of the horsepower which they transmit.

The Model 50 take-off is manufactured in both single and simultaneous drive designs. The latter permits operation of truck, or individual operation of driven equipment, or of both simultaneously.

Models 75 and 100 are manufactured for single drive, simultaneous drive and also for double drive. With double drive take-offs, the truck may be operated alone; either of two pieces of driven equipment may be operated individually, or both pieces of driven equipment may operate simultaneously.

Use Free Postcard For More Details.

P302. Body Sill Braces

The London Vault Co., London, Ohio, has developed a line of body braces for simplifying and strengthening truck bed construction. Made of 12-gage steel in rights and lefts, the braces are 9 in. in length with 6-in. wings accommodating $\frac{3}{8}$ -in. bolts for securing them to the under body or sills. These All-Way braces are said to aid substantially in strengthening sills and braces of truck beds.

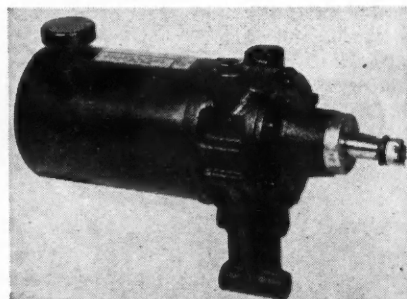
Use Free Postcard For More Details.

P303. Vacuum Pump

A new auxiliary vacuum pump which combines a pump, an oil separating tank and reservoir in one compact unit weighing only $8\frac{1}{2}$ lb. has been announced by the Bendix Products Division, Bendix Aviation Corp., of South Bend, Ind.

This pump is designed for use on gasoline engine-driven trucks and tractors, where it is said to maintain a high degree of vacuum even when the vehicle is operated for long periods with wide open throttle.

The construction and principles of operation are similar to the larger Bendix



Convac pump for Diesel truck operation.

The pump may be installed on and driven by the engine or by separate electric drive. Any standard $\frac{1}{2}$ -in. Vee belt may be used and the drive pulley can be located on the crank shaft, an extension on the generator shaft or it can be an auxiliary pulley on the fan hub.

Use Free Postcard For More Details.

P304. Aluminum Cleaner

A new metal cleaning compound especially designed for cleaning aluminum, designated as Optimus No. 101A, is announced by Optimus Detergents Co., Matawan, N. J.

The cleaner is a balanced blend of medium duty alkaline cleaner, including special water softening materials and inhibitors to prevent attack on the metal. It is said to be particularly effective for cleaning dirt, grease and oil.

It can also be used as a soak cleaner for ferrous metals other than aluminum, such as die castings, brass, bronze, pewter, etc. *Use Free Postcard For More Details.*

P305. Valve Seat Grinder

A $\frac{4}{10}$ h.p. air motor has been added to the line of "Knock-Out" Valve Seat Grinders, according to a recent announcement by the K. O. Lee Co., Aberdeen, S. D.

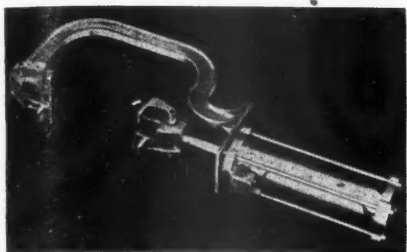
This air motor, manufactured by Aro Equipment Corp., operates efficiently on 80-

90 lb. air pressure and its speed is variable from 1500 to 17,000 r.p.m. Being smaller than the conventional electric motors and having a pistol grip, it easily reaches hard-to-get-at valve seats without the use of flexible or angle drives.

Use Free Postcard For More Details.

P306. Tire Tool

A new type pneumatic tire tool is now available for use with safety wheels of passenger cars and for light trucks up to 7.50 size. Developed by H. E. Furman Mfg. Co., Dallas, Tex., this new Vermillion tire



tool uses regular air pressure to operate two pushers which gently but firmly push the heels off the rim toward each other to the center of the drop section. When broken loose, the tire may be dropped into the drop center and removed—without removing the hub cap or taking the wheel off the vehicle.

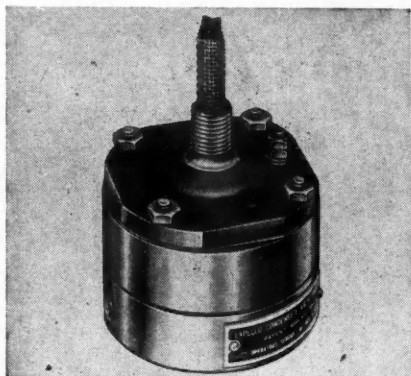
Weighing 14 lb., and made of cast steel, this portable pneumatic tool is said to speed the task of tire removal.

Use Free Postcard For More Details.

P307. Condensate Valve

A new "Expello" Condensate Valve has been designed to remove the water, oil sludge, and dirt from the air reservoir of any make of bus or truck provided with

air brakes. A self-contained electric heating element in the Model C-1 prevents freezing in cold weather; in zero weather, the valve temperature is approximately 40 deg. F. For areas that do not have freezing temperatures, Model C-1-B without the heating element is furnished.



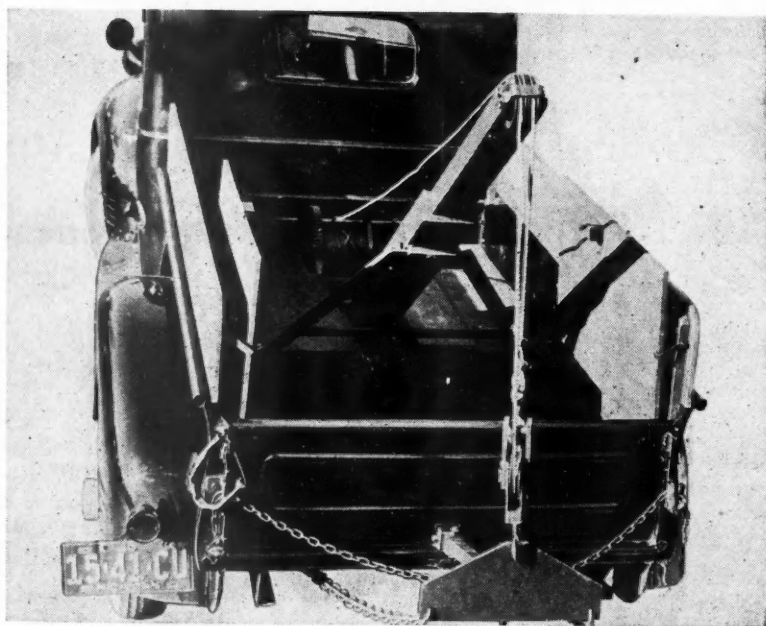
Installation is made in less than 30 minutes. The new valve replaces the plug or drain cock in the bottom of the air reservoir and is connected to the brake exhaust outlet by $\frac{3}{8}$ -in. copper tubing. Adapters are available for installation on syphon drain tanks which have their outlets at the end of the tank. The terminal of the heating element is connected to the dash ignition switch.

In operation, the condensation collecting in the air reservoir runs down into the top of the "Expello" valve and is held there by a Neoprene valve disc until a brake application is made, when it escapes through the open valve and out the exhaust port.

The "Expello" valve is manufactured by the Fleet Operators Service Laboratory, East Dearborn, Mich.

Use Free Postcard For More Details.

P308. Folding Wrecker for Light Trucks

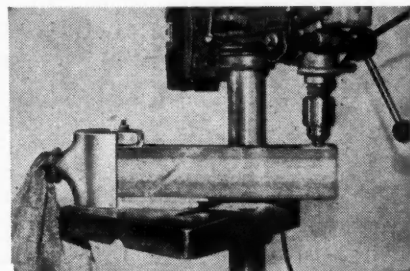


★ The Canfield folding wrecker distributed by Walter Williams, Inc., Detroit, Mich., is designed to fit into a regular pickup bed so that the vehicle can be used both as a truck and as a wrecker. The folding crane utilizes only 6 in. of space above the floor when stowed. The

P309. Drill Press Sander

A new practical method for many surface finishing jobs on wood, metal, plastic and other materials has been announced by the OK Specialty Co. of Chicago. The new finishing method takes the form of the OK Belt Sander, a drill press attachment.

Weighing less than 5 lb. the new sanding device is made up of an aluminum base with backing plate or platen, a driven pulley mounted on ground steel shaft and running on precision ground ball bearings, and cast aluminum driver pulley mounted on $\frac{1}{2}$ in. ground steel shaft to fit into the



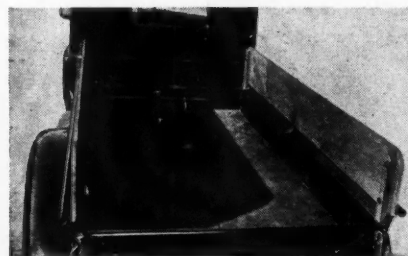
drill press chuck. The base of the sander is bolted to a drill press table. Merely by moving the drill press table, the attachment can be adjusted to handle sanding belts from 26 in. to 36 in. in length.

The sander takes belts from $\frac{1}{2}$ in. to 3 in. in width. Two sanding belts, one coarse grit and one fine grit, are furnished with each attachment. The device comes assembled ready for use with any drill press. Most efficient performance is achieved at 3500 to 5000 r.p.m. The sander stands 5 in. high, and the base measures $10\frac{1}{2}$ in. long by $3\frac{3}{4}$ in. wide.

Use Free Postcard For More Details.

(TURN TO PAGE 252, PLEASE)

false floor of 1-in. plywood, hinged in sections, provides an overall floor when not in use. When the need of a wrecker arises, the crane is extended, and the tow-truck is capable of towing vehicles weighing up to 10,000 lb. Accessories included are staybar, adjustable swaybar chains buffer plate, booster springs and frame brackets for rear axle. The winch is manually operated by means of a crank. Power winches are available at additional cost. Designed for $\frac{1}{2}$, $\frac{3}{4}$ and 1-ton trucks, the folding wrecker can be installed by two me-



chanics in about two hours, according to the manufacturer, Weight, 375 lb.

Use Free Postcard For More Details.

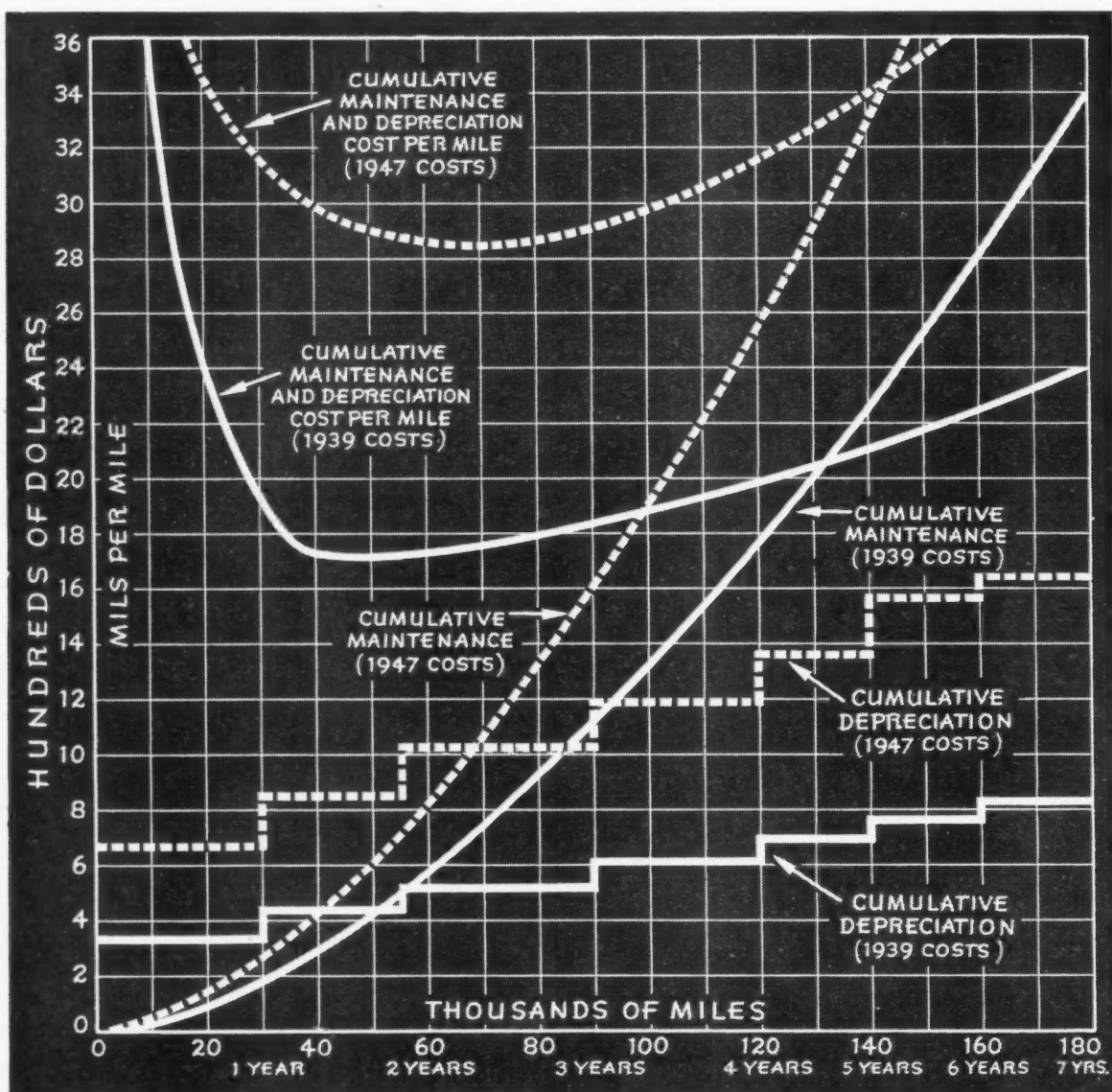


Fig. 1. Cumulative maintenance and depreciation experience for group of $\frac{1}{2}$ -ton panel delivery vehicles purchased in 1939-40 at \$900 each adjusted to 1939 cost levels (solid lines) and 1947 cost levels (dotted lines). Initial price is up 100%, labor and materials are up 47%. Lowest cost per mile (upper curves) occurs near crossing of depreciation and maintenance curves

Graph System Helps Locate

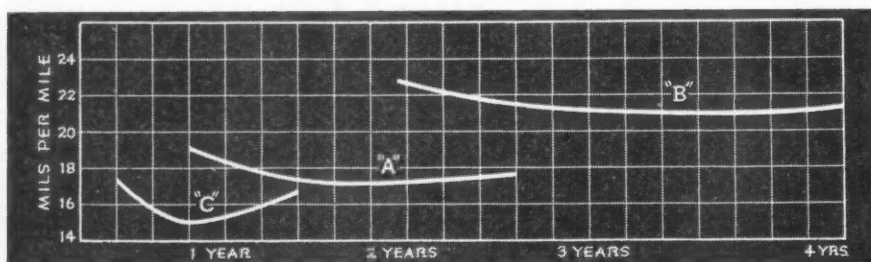


Fig. 2. Cost per mile curves in vicinity of lowest cost per mile for same group of vehicles in Fig. 1 but adjusted for following annual mileage accumulation rates: "A" 30,000 miles; "B" 12,000 miles; "C" 54,000 miles

▼ THERE ARE TWO MAJOR FACTORS which determine the point at which a vehicle should be replaced, one is the depreciation cost and the other is the cost of maintaining the vehicle. It is true that there are other minor factors such as appearance or advertising value and loss in efficiency which cannot be restored through maintenance. But generally speaking depreciation and maintenance

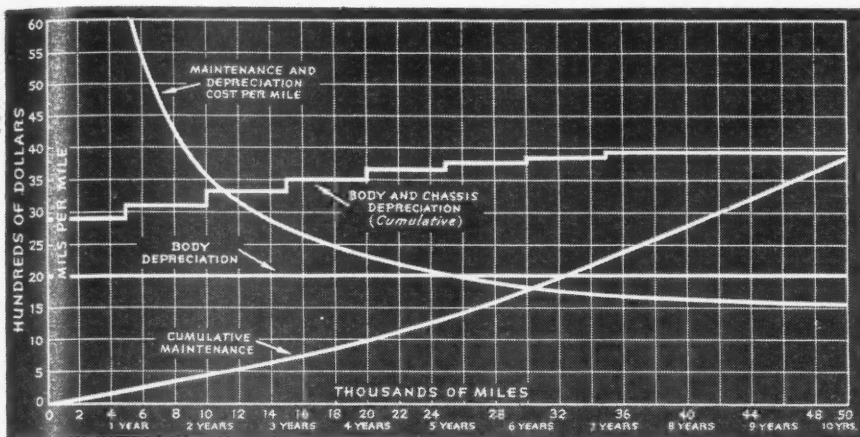


Fig. 3. Cumulative maintenance and depreciation experience for group of line trucks (16,000 g.v.w.) purchased in 1936 at cost of \$4000. Low mileage and relatively high initial cost extend economical operation to 10 years

By plotting cumulative maintenance and depreciation costs, Pittsburgh operator puts finger on most economical trade-in point using both original and present costs

by **S. G. PAGE**
General Superintendent,
Equitable Auto Co., Pittsburgh, Pa.



Best Trade-In Point

nance cost are the controlling factors.

During the early life of a vehicle depreciation is the largest of these two factors, but at some time along the way depreciation becomes less compelling and maintenance cost which starts out small, takes control.

It is obvious that there is no exact formula which can be used to predict

the future, or in other words the exact point at which a vehicle should be replaced. It is possible to boil down a lot of experience and draw general conclusions, but it is still easier to look back than to look ahead.

In the past we have assembled figures over a vehicle life span that was considerably longer than its economic life. The war years have added to this statistical material so

that if you plot cumulative depreciation and maintenance curves and transfer this information to a cost per mile curve you can look back and point to the place where the vehicle should have been replaced.

Maintenance vs Depreciation

AS AN EXAMPLE of this line of thinking let us refer to the set of curves shown in Fig. 1, representing a group of 1½-ton sedan deliveries used by our trouble men. The vehicles were purchased during 1939 and 1940 at an average cost of \$900, and have since turned out an average mileage of 30,000 miles per year.

The solid lines in this chart represent a depreciation rate of 37 per cent the first year and 10 per cent for each succeeding year based on the initial cost, and maintenance costs corrected to eliminate subsequent price changes in parts and labor.

The dotted lines represent the same depreciation rate but are based on an initial cost of \$1800 (up 100 per cent over 1939-1940 level) and maintenance costs based on today's prices for labor and material (up 45 per cent over 1939-1940 level). This adjustment requires the assumption that the quality of today's vehicle is about the same as the 1939-1940 product.

The question we wanted to answer was whether our original premise still held in view of the present purchase price of the vehicle and present labor and material costs.

Based on the rate at which we accumulate mileage, the cost of these vehicles and our standards of maintenance, the cheapest cost per mile is in the area where the cumulative maintenance cost curve crosses the cumulative depreciation curve. For this group of vehicles, based on the 1939-1940 cost levels, it was about 50,000 miles or 20 months. This point would vary some between fleets, depending upon the rate of change in accumulative depreciation curve and accumulative maintenance curve.

From 50,000 to 70,000 Miles

THE CURVE based on 1947 costs, however, indicates the vehicle will have to be operated approximately 70,000 miles or 40 per cent more miles in reaching the point of cheapest cost per mile. This is due to the fact that first cost has increased more

(TURN TO PAGE 122 PLEASE)

Adapted from a paper presented at the annual meeting of the American Gas Association.

Mobile Records

One Folder Keeps 18 Terminals Posted

Metal box on each vehicle houses "M" folder and three work-sheet forms to keep all concerned posted on current maintenance history



by ALVIN HILL

President, Hill Lines, Inc.
Amarillo, Texas

VOURS IS A SMALL LINE with approximately 100 units; 35 tractors and 35 trailers, the balance pickups and 1½-ton straight trucks used at the terminals. But we operate from 18 terminals and it was necessary to design a maintenance record system that would keep all concerned up-to-date on the status of each unit.

In working out our record system we have tried to hold the overall to the simplest possible. We believe we have a system that eliminates 90 per cent of the usual red tape and the customary form fodder accumulation. We know that our system puts the responsibility directly where it belongs.

OUR principal work form is printed on the inside of a double folder which is carried by each driver in a metal box inside his tractor or truck cab. The top half of the folder shows minor and major work requirements, and gives the symbols for each check and columns for fre-



Driver Laurin Baustisto demonstrates accessibility of maintenance records kept in cab of each truck

quency of service. (See opposite page.)

Under minor work, symbol A lists the regular monthly operation check requirements, as: 1. Toe-in checked. 2. Camber checked. 3. Caster checked. 4. Kingpin inclination checked. 5. Bushings and spindle bearings checked.

Minor work symbol B is for each

round trip or an average equal mileage, and lists four musts. Minor work symbol C is a monthly and round trip combination requirement and lists 11 musts. D is three months and monthly, and so on.

Under a Frequency & Service column at the left of the A-B-C symbols are the symbols or notations for when this work must be done. 1 stands for

MINOR WORK			HILL LINES		MAJOR WORK		
FREQUENCY OF SERVICE	SYMBOL	CHARACTER OF OPERATION		SYMBOL	CHARACTER OF OPERATION		
1 1 1 1 1	A	1. Toe-in Checked 2. Camber Checked 3. Caster Checked 4. Kingpin inclination checked 5. Bushings and spindle bearings checked		M MOTOR	1. Valve work 2. Bearing work 3. Piston work 4. Ring job 5. Sleeve job 6. Timing gear job 7. New motor-give size		
1 1 1 1 1	B	1. Plugs checked 2. Points checked and replaced if needed 3. Oil pressure to motor checked 4. Valve clearance checked		N MOTOR ACCESSORIES	1. Carburetor changed or overhauled 2. Distributor changed or overhauled 3. Regulator changed or overhauled 4. Spark plugs changed 5. Tackometer changed or overhauled 6. Horn changed or overhauled 7. Windshield wiper changed 8. Battery changed 9. Generator changed (not overhauled) 10. Work on electrical lines		
1 1 1 1 1 1 1 1 1 1	C	1. Grease chassis, fifth wheel, drive line, etc. 2. Oil added to motor if needed 3. Oil changed 4. Add oil, air compressor, transmission, differential if needed 5. Drive line checked 6. Battery checked for water, terminals and supports 7. Radiator, water, hose connection and fan belt checked 8. Lights, clearance, head, spot and stop checked 9. Horn, heater, windshield wiper, defroster and tackometer checked 10. Air pressure in tires tested 11. Gas lines and fuel pumps checked		O COOLING SYSTEM	1. Radiator repaired 2. Hose connections replaced		
1 1 1 1 1 1 1 1 1 1	D	1. Brakes, brake fluid, vacuum and air lines checked 2. Wheel bearings checked and greased if necessary		P TRANSMISSION	Describe on Work Sheet		
1 1 1 1 1 1 1 1 1 1	E	1. Generator pulled and new brushes inserted		Q DIFFERENTIAL	Describe on Work Sheet		
1 1 1 1 1 1 1 1 1 1	F	1. Generator, starter and all circuits tested 2. Distributor, coil and cond. tested on machine		R DRIVE LINE & AXLES	Describe on Work Sheet		
1 1 1 1 1 1 1 1 1 1	G	1. Washed		S WHEEL BEARING	Describe on Work Sheet		
1 1 1 1 1 1 1 1 1 1	H	1. Flashlight batteries 2. Flares and flags 3. Fuses 4. Fire extinguisher fluid 5. Circuit fuse 6. First aid kit supplies (explain) 7. Fan belt 8. Axle 9. Points 10. Plugs 11. Condenser and distributor cap 12. Coil 13. Seal Beam 14. Fuel pump 15. Lug wrench 16. Jack		T BRAKES VAC-AIR	Describe on Work Sheet		
				U FRAME CAB SPRINGS	Describe on Work Sheet		
				V GASOLINE SYSTEM	Describe on Work Sheet		
				W STEERING	Describe on Work Sheet		

Work Sheet Required on All Major Work

Incomplete Work—temporary work or unattended to negative check requires "Incomplete Check and Work Sheet."

Attention Sheet, Work Sheet and Incomplete Work Sheet are in duplicate—one copy always follows truck.

Always see that A, B, C, and D are answered or D crossed out if not applicable.

R—Round Trip or Equal
1—Monthly
3—Three Months

FROM DATE 10-2-46 TO DATE 10-31-46		MAINTENANCE RECORD										TRUCK NO 39							
DRIVER TO FILL IN THIS				OIL		GAS		MINOR WORK		B C		INITIALS OF VEH. O ANSWERED		MAJOR WORK		COST		D	
FROM	TO	LEAVE	DATE	A	INITIALS	AT	GTS	GRS	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION	USE SYMBOLS—FACH OPERATION
A	Q	331	10-2	N	Da	Q		58	C-5										1
Q	A	467	10-3	N	Da	A	8	63	C-1-3-4	D-2	N	Y	OL				1.25	N	2
A	L	460	10-4	N	Da						N	N	HKK					N	3
L	A	460	10-5	V	Da	A	8	80	C-1-3-4		N	Y	AMC	R-Elect Pump			6.00	N	4
Q	Q	331	10-7	V	Da						N	Y	LLK					N	5
A	L	460	10-28	Y	Da						N	Y	LLK					N	23
L	A	460	10-29	Y	Da	A	8	78	C-1-3-4	D-2	N	Y	HKK	Fan Belt			1.50	N	24
A	Q	331	10-30	Y	Da						N	N	LLK					N	25
Q	A	331	10-31	Y	Da	A	8	56	C-1-3-4		N	Y	HKK					N	26
			10-4-19	ML															27

A=Answer "Yes or No" if Attention Sheet was turned in
C=Answer "Yes or No" if Major Work was done
D=Answer "Yes or No" if Incomplete Work or Check was done
D=Answer "Yes or No" if Maj. Work incomplete or was not done

DRIVERS ARE INSTRUCTED NOT TO LEAVE TERMINAL UNLESS A-B & C ARE ANSWERED AND D IF APPLICABLE

Upper half of maintenance folder provides frequency and code for minor and major work operations. Lower half is running record of mileage and all work performed, entered on daily, coded basis

once each month, R for each round trip or an equal mileage, and 3 means every three months. These indicators are listed at the lower right hand corner of the inside of the top half of the folder.

Across from the minor work columns is space for major work. Here symbols are given, as M for motor, N for motor accessories, O for the

cooling system, P for transmission, Q for differential, etc.

Three Work Forms
BEFORE discussing the lower half of this form, let me call attention to the three maintenance forms that

are used in conjunction with it. These sheets always accompany the driver. He is given duplicate pads for each and when an Attention Sheet, a Major Work Sheet, or an Incomplete Work and Check Sheet is made out, (TURN TO NEXT PAGE, PLEASE)

Mobile Records . . .

(Continued from page 67)

and a copy is placed in the folder.

On the attention sheet, the common needs are listed and the driver draws a circle around the listing which needs attention. There is a space on the lower part of the sheet for further explanation if necessary. This sheet is filled out by the driver immediately when he arrives at any terminal. The original copy of the report is given to the head mechanic or man in charge of maintenance at the shop. Copy is retained by driver in folder.

Where work is done, but the job is incomplete, the incomplete work and check sheet must be filled in and the original left with the mechanic in charge of the terminal, and the copy placed in the folder and kept there. This copy shows every maintenance man who later works on the truck exactly what was done and what needs to be done on this particular correction.

For example, let us assume that a driver reported trouble with gas line, that the line was checked but that when the unit reaches the headquarters terminal and shop, it should be rechecked and the line better supported.

The third form is the major work sheet and shows description of work done, parts furnished and by what terminal, an estimate of parts cost, and an explanation of reasons why work was necessary. This sheet is signed by the mechanic in charge and a copy is carried in the driver's folder.

We have letter symbols for all of our terminals, which all drivers must know. A-Amarillo, B-Clovis, C-Portales, D-Elida, E-Roswell, F-Artesia, G-Carlsbad, H-Hobbs, J-Lovington, K-Tatum, L-El Paso, M-Melrose, N-Fort Sumner, P-Vaughn, Q-Albuquerque, R-Pecos, U-Encino, W-Hereford, and S-for various other stops.

Daily Entries

THE lower part of the "M" (Minor & Major Work) folder, provides 27 lines for keeping a daily tab on the unit for one month. The form

The image shows three overlapping forms from the 'Mobile Records' system. The top form is the 'MAJOR WORK SHEET' with fields for 'TRUCK NO.', 'DATE', and 'REASON FOR WORK'. The middle form is the 'INCOMPLETE WORK and CHECK SHEET' with a table for tracking work status. The bottom form is the 'ATTENTION SHEET' with a table for listing maintenance needs and a section for 'EXPLANATION OF REASONS WHY WORK WAS NECESSARY'.

These three forms, reading up the page, are used for driver complaints, temporary repairs, and major work. They are kept in "M" folder until work is completed and entered inside folder, then filed

starts with the date in upper left hand corner—from-to. The upper right hand shows the truck or tractor number.

Starting at the left hand side of this lower sheet there is a column on each of the 27 lines for: From, To, Miles, Date Arrived, the A column (see below), column for initial of head mechanic doing work,

a column for symbol for terminal doing the work, columns for oil in quarts and gas in gallons. A larger column for minor work, where symbols are also used, then the B column, the C column, a column for initials of man who answered questions on Major Work, then the Major Work column, for costs, and the D column.

(TURN TO PAGE 71, PLEASE)

Mobile Records

(CONTINUED FROM PAGE 68)

At the bottom is given the key for the symbols A, B, C and D . . . and instructions for answering each lettered column, as:

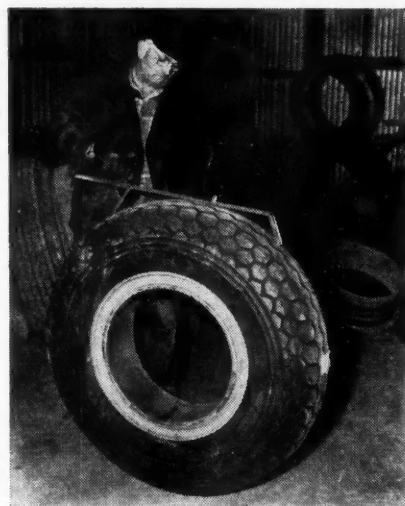
A is to be answered "Yes" or "No" if the attention sheet was turned in.

B is to be answered "Yes" or "No" if incomplete work sheet or check sheet was turned in.

C is answered "Yes" or "No" if major work was done.

D is answered "Yes" or "No" if major work was reported but not done, or is incomplete.

To better understand the working of this bottom half of the "M" folder, let's take the first posting. It shows from symbol A to Q, 331 miles. This tells us that the unit went from Amarillo to Albuquerque, a distance of 331 miles by the speedometer. The next column shows 10-2 as the date arrived. Under the A column is an



Tire shop foreman Bert Clark sets shop-made matching gage to tire contour. Next he will pick out a mate that exactly matches. Greater speed and convenience are claimed for tool

**NO OTHER TUBE
REPAIR SERVICE
PROVIDES**

**SO MANY
ADVANTAGES**

STRONGER REPAIRS

Fills, reinforces, vulcanizes the tube injury completely safe. No failures in service.

NEATER REPAIRS

A smooth, feather-edge repair.

NO FIRE HAZARD

Safe. Carries the seal of approval of the Underwriters Laboratories.

NO SMOKE OR FUMES

Clean electrical operation.

AUTOMATIC

Automatic shut-off controls time and temperature of vulcanization. No guessing.

HANDY

Patch and Valve Stem Units come ready-prepared. No waste—easy to inventory.

FASTER

Completes repair in quickest possible time for perfect vulcanization.

COMPLETE

Handles all types of repairs in all tubes—synthetic or natural rubber.

LOW-COST REPAIRS

Dillectric Patch Units cost less than 4c each.

ATTRACTS CUSTOMERS

Car owners know electric vulcanizing is best—are impressed with Dillectric.

USED BY OVER 75,000 STATIONS

No. 1 in tube repair service.

RECOMMENDED

and approved by all leading tire and oil companies.

• More with Dillectric — more advantages — more business — more profit. That's why more than 75,000 service stations repair tubes the Dillectric way. Check the benefits for you — compare the difference. No other tube repair service provides factory-safe repairs so simply, so quickly, so inexpensively. Electrically heated patch or valve stem units, controlled automatically for time and temperature, take out all guesswork — assure perfect vulcanization. Cash in by using this "stand-out" service attraction for all tube repair jobs. Mail a postal card, today, for full information.

THE DILL MANUFACTURING CO.

700 EAST 82nd ST., CLEVELAND 8, OHIO

Branch—1011 S. Flower St., Los Angeles 15, Cal.



No. 6677 Assortment
Including Clamp, Buffer
and 50 Patch Units—\$6.25

DILLECTRIC
Electrically VULCANIZED
TUBE REPAIRS

N, which indicates no attention sheet turned in here. The column figures show no oil but 58 gallons of gas at Q (Albuquerque), and under the minor work column we have the symbol C-5.

Looking at the upper part of the folder we see that C-5 shows that the minor work reported was having the drive line checked. There was no major work done so column B and C are blank, as is the column marked Major Work, the column marked costs, and column D.

A glance at other filled in lines will give the reader an idea of the valuable information which one month's record produces.

At the end of the month the driver turns in this folder and is given a new one. However, the copies of the three forms, the attention sheet, the major work sheet, and the incomplete work and check sheet, remain with the vehicle for a period of four months.

When a driver arrives at his destination he immediately delivers his maintenance record folder to the mechanic in charge or to the local agent if a small terminal.

If work is needed on the trailer, the driver writes this on the bottom part of the attention sheet. If work done on trailer is incomplete, an incomplete work sheet is made out.

It is the duty of the mechanic in charge at the terminal to see that all

(TURN TO PAGE 262, PLEASE)

GMC Announces

★ Gasoline Models

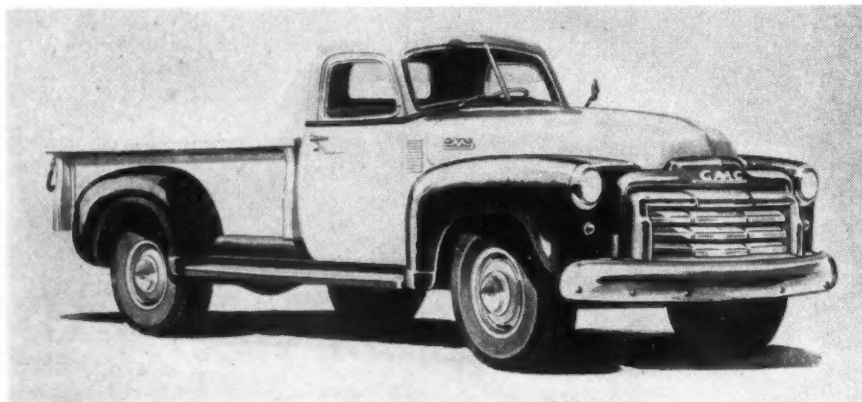
Light and medium-duty lines feature new styling; larger, more-comfortable cabs; improved engines, brakes, frames and springs

GMC Gasoline Truck Specifications

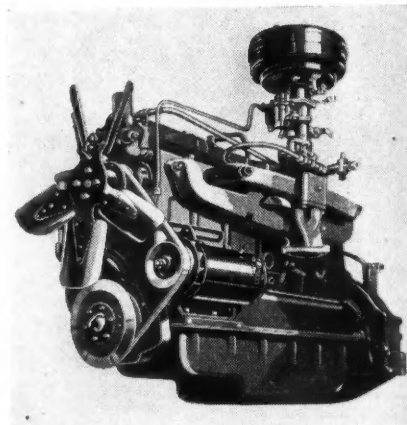
MODEL & TYPE	W.B. (In.)	Maximum G.V.W. (Lb.)	Body Length (Ft.)	MODEL & TYPE	W.B. (In.)	Maximum G.V.W. (Lb.)	Body Length (Ft.)
PICKUPS				PLATFORMA (Cont.)			
FC-101.....	116	4,600	6½	FC-351.....	137	15,000	9
FC-102.....	125¼	4,600	7½	FC-303.....	161	13,000	12
FC-152.....	125¼	5,800	7½	FC-353.....	161	15,000	12
FC-253.....	137	8,800	9	PANELS			
CANOPY EXPRESS				FC-101.....	116	4,600	7
FC-101.....	116	4,600	7	FC-253.....	137	8,800	9
FC-253.....	137	8,800	9	SUBURBANS			
STAKES				FC-101.....	116	4,600	7
FC-102.....	125¼	4,600	7	SPECIAL MILK DELIVERY CHASSIS			
FC-152.....	125¼	5,800	7	FC-251.....	116	8,800	*6
FC-253.....	137	8,800	9	FC-252.....	125¼	8,800	*8
FC-281.....	137	11,000	9	CHASSIS WITH CABS			
FC-283.....	161	11,000	12	FC-401.....	137	17,000	.....
FC-301.....	137	13,000	9	FC-451.....	137	18,000	.....
FC-351.....	137	15,000	9	FC-471.....	137	20,000	.....
FC-303.....	161	13,000	12	TRACTOR CHASSIS			
FC-353.....	161	15,000	12	FC-301.....	137	22,000	.....
PLATFORMS				FC-302.....	149	22,000	.....
FC-253.....	137	8,800	9	FC-303.....	161	22,000	.....
FC-281.....	137	11,000	9				
FC-283.....	161	11,000	12				
FC-301.....	137	13,000	9				

* Load space.

Light-duty pick-ups, in ½, ¾ and 1-ton capacities, typify new GMC styling



New deluxe cabs feature rear quarter window; all have 3-point suspension, are 3¼ in. longer, 9⅝ in. wider



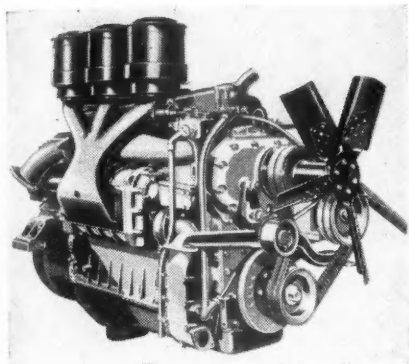
Light and medium-duty engines now include 228, 248 and 270-cu. in sizes. All models have same basic features

▼ GMC TRUCK & COACH Div., General Motors Corp., has brought out its FC line of light and medium-duty gasoline engine-powered trucks featuring many significant mechanical improvements as well as enhanced eye appeal and increased driver comfort.

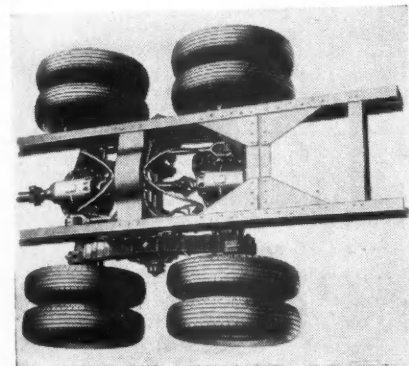
The line features a variety of body types in a range of capacities, including pickups, canopy express, panels, suburbans, stakes, platforms, special milk delivery chassis, chassis with cab, and a special tractor group. A new line of C-O-E models will be

(TURN TO PAGE 138, PLEASE)

★ Diesel Models



GM 671 2-cycle diesel engine now has three oil bath air cleaners, larger oil cooler and new deep-sump pan



Tandem drive features worm-gear, full-floating axles, parallelogram torque rods. Double reduction is optional

Announcement of diesel-powered trucks placed on the market by the GMC Truck & Coach Div., General Motors Corp., reveals a line of eight basic heavy-duty models designed specifically for diesel operation. The "750" models have the well-known two-cycle GM 4-71 four-cylinder diesel, while the other models feature the GM 6-71, six-cylinder diesel.

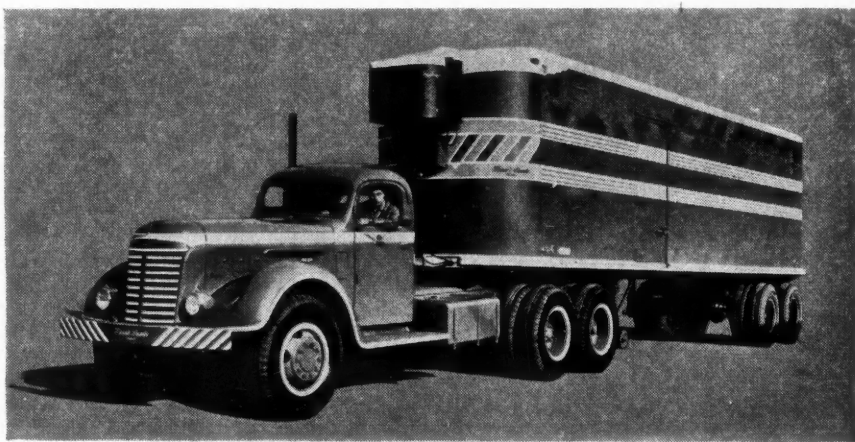
These models include—ADCR750 for tractor service, ADC750 for truck service, ADFR750 for tractor service, ADF750 for truck service, ADC900 for truck service only, ADCR900 for tractor service only, ADCW950 and ADCW970 for truck or tractor service. The ADFR750 and ADF750 are C-O-E models.

Major mechanical improvements incorporated in chassis of the GMC

Eight basic heavy-duty series are designed for operation with stepped-up GM two-cycle diesels in 4 and 6-cylinder types

GMC Diesel Truck Specifications

MODEL	W.B. (In.)	C.A. (In.)	Maximum G.V.W. (Truck)	Maximum G.V.W. (Train)	MODEL	W.B. (In.)	C.A. (In.)	Maximum G.V.W. (Truck)	Maximum G.V.W. (Train)
ADCR750 & ADC750					ADC 904.....	192	102	35,000	.....
ADCR 752.....	136	60	.....	50,000	ADC 905.....	210	120	35,000	.....
ADCR 753.....	160	84	.....	50,000	ADCR 900 Group				
ADC 754.....	178	102	30,000	.....	ADCR 902.....	150	60	.....	65,000
ADC 755.....	196	120	30,000	.....	ADCR 903.....	174	84	.....	65,000
ADFR750 & ADF750					ADCW 950 Group				
ADFR 751.....	108	64	.....	50,000	ADCW 953.....	198	108	45,000	70,000
ADFR 752.....	136	92	.....	50,000	ADCW 954.....	216	126	45,000	70,000
ADF 753.....	160	116	33,000	.....	ADCW 970 Group				
ADF 754.....	178	134	33,000	.....	ADCW 973.....	200	110	55,000	90,000
ADF 755.....	196	152	33,000	.....	ADCW 974.....	218	128	55,000	90,000
ADC900 Group									
ADC 903.....	174	84	35,000	.....				



Model ADC 905 tractor. The new aluminum hood has service door in left side

gasoline engine line also apply to diesel models. These include—new front springs, improved steering, worm-drive for six-wheelers, air power shift for two-speed axles, and a new line of double-reduction axles.

All-steel cabs of new design for C-O-E and conventional vehicles are said to combine passenger car comfort with safety credited to the adoption of "cradle-coil" seat cushions. These have hour-glass form soft ac-

tion cushion springs, individually wrapped in burlap bags, with foam rubber pads over seat springs and thick jute and cotton padding in the seat backs. C-O-E cabs have deep bucket type seats with foam rubber pads in the cushions. The cabs have ample leg and head room, a wide visibility "V" windshield, quick-vision instrument panel, controls conveniently located, wide doors, all-

(TURN TO NEXT PAGE, PLEASE)

GMC Diesels

(Continued from page 73)

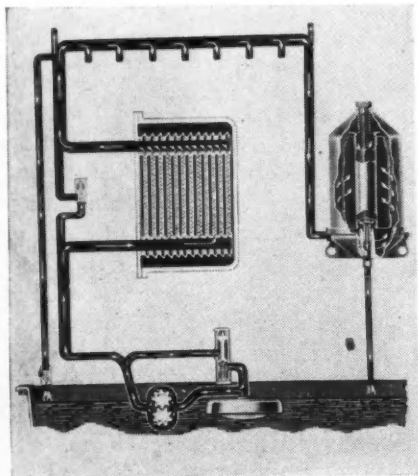
weather insulation, and controlled ventilation. Windshield and door windows are of safety glass, the door glass being metal framed and rubber mounted around the outside edge to reduce the possibility of glass breakage.

On C-O-E cabs, a heavily insulated engine cover and two cowl ventilators to supplement the adjustable windshield have been provided. All models from "900" and up have a longer and wider aluminum hood provided with a service door on the left side. This makes it possible to check and add oil without lifting the hood. The vertical exhaust stack—required by law on diesel jobs in some States—is standard on all models, eliminates danger of cargo spoilage by leakage of exhaust gases.

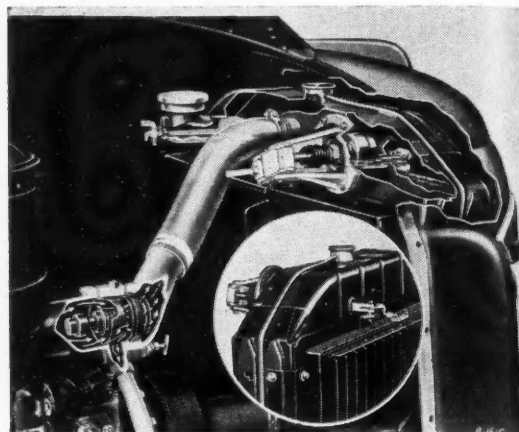
Engine Improvements

SOME important improvements have been made in the two-cycle GM diesel engines used in this line. Larger oil coolers with additional plates have been provided to increase the cooling effect and decrease restriction to oil flow. Improvements in manufacturing processes are said to have made it feasible to dispense with the oil strainer. The cast iron oil pump gears formerly employed are replaced

Diagrammatic view shows details of oil cooling and oil filter system. Cooler capacity as been increased



New pressurized cooling system has built-in overflow tank, separate thermostats, not sensitive to pressure change, control circulation and shutters



GMC Diesel Engine Specifications

	GM 4-71 (All 750 Models)	GM 6-71 (All Other Models)
Bore (in.)	4 1/4	4 1/4
Stroke (in.)	5	5
Displacement (cu. in.)	283.6	425.4
Gross brake hp. (max.) at 2000 r.p.m.	133	200
Gross Torque (max.) at 1100 to 1400 r.p.m. (lb.-ft.)	400	600

The GM engines are two-cycle diesels with direct fuel injection. They are supplied with 12-volt ventilated, voltage and current regulated generator; 12-volt starting motor with solenoid engagement, push-button control; centrifugal governor; two-unit oil filter; two fuel filters. The 4-71 has dual oil bath air cleaners while the 6-71 has three. Both engines are mounted on rubber.

by steel gears. The oil pan has been changed to a deep sump design, assuring proper lubrication on grades upward of 25 per cent.

An outstanding feature is the new water circulation system. It is pressurized and employs an in-built overflow tank in the top tank of the radiator. Water, expanded or displaced by steam is forced into this secondary tank which is equipped with a relief valve to guard against excessive pressure. As the system cools, reducing the pressure, the water returns without loss. Larger water passages at the oil cooler, water pump, thermostat housing, water manifold outlet, and water by-pass provide more uniform pressure and temperature. More gallons of water circulate through the system to permit faster dissipation of heat. Cylinder head water nozzles direct a pressure spray of water around valve seats and injectors. This eliminates cracking of cylinder heads un-

der normal operation. New type thermostats, not sensitive to pressure changes or vibration, assure more even water temperatures and greatly improve actuation of radiator shutters. The shutter thermostat has ample power to operate shutters regardless of air pressure or resistance offered by adhering dirt.

A rubberized felt insulation has been placed between the radiator core and shell around the top tank to prevent recirculation of hot air to the forward side of the radiator core. The core itself is center mounted to eliminate transfer of strain to the core—and bolts replace sheet metal screws in this assembly. Models 900 and up have larger radiator cores. Frontal area has been increased from 629 to 753 square inches, an increase of 20 per cent.

The new fuel system now takes fuel from all tanks at the same time and eliminates 3-way and 4-way valves.

The intake air heater for cold weather starting is now standard. Lubricating oil filters, generator, and governor are located higher on the engine to improve accessibility. An idler pulley for quick adjustment of fan and air compressor belts replaces the old split-type pulley.

In addition to these improvements, GM has effected some major changes in other elements of the engine. Blower operation is improved by the addition of a land on each lobe of the rotor to further reduce clearance and thus increase delivery. Cylinder liners also have been redesigned to incorporate a single row of inlet ports 5/8 in. in diameter to prevent plug-

(TURN TO PAGE 124, PLEASE)

EASY DOES IT!



...it's **EASY** to Convert to air with **Wagner** AIR BRAKE KITS

WAGNER Air Brake Kits give truck, tractor, trailer, and bus operators everything that is needed to make quick, easy installations—They contain all parts, connections, and brackets as well as complete instructions so that application to your vehicle can be made right in the field.

One of the outstanding features of the Wagner Air Brake System is the famous Rotary Air Compressor which

mounts easily under the hood and is belt-driven for high efficiency.

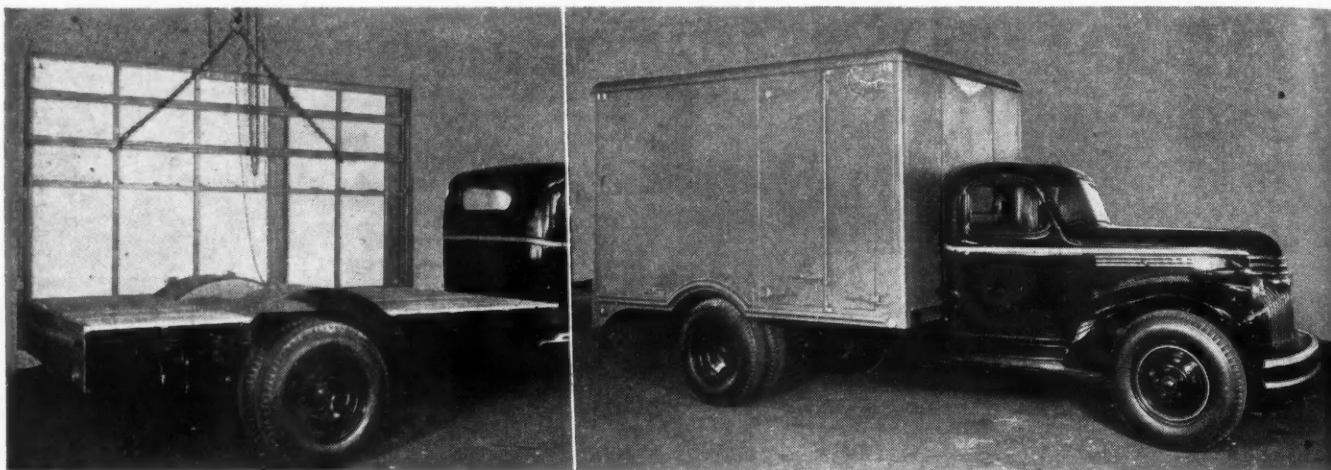
Today, successful commercial car operators are conscious of the fact that higher braking efficiency means increased payload profits and added safety. Wagner Kits offer you an unusual opportunity to convert your vehicles to air. Write for Bulletin KU-50B, addressing your request to Wagner Electric Corporation, 6470 Plymouth Avenue, St. Louis 14, Missouri.

K47-1



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID
COMAX BRAKE LINING • AIR BRAKES • NOROL
TACHOGRAPHS • ELECTRICAL PRODUCTS





Left. Beginning the assembly of a standard unitized body on a popular size truck chassis. Right. The completed body

FRUEHAUF

Adds Truck Body Line

Of Aerovan-type construction, 12, 14 and 16-ft. all-steel bodies use standardized parts. Available in 500 basic combinations

V A NEW LINE of all-steel truck bodies is announced by the Fruehauf Trailer Co. The new bodies are manufactured in three popular sizes—12, 14 and 16 ft. lengths. Straight frame models are available in all three lengths, and a wheelhouse model in the 12-ft. size. They employ the Aerovan-type construction, featuring light weight with exceptional strength, and the steel-ribbed reinforced floor used in Fruehauf trailers.

Quality construction at lowest prices is assured through the use of standardized parts, mass produced with many of the same production facilities used in volume manufacture of trailers.

All-steel doors, for example, are standard Fruehauf welded trailer doors equipped with self-latching cam locks. Pressed steel hinges permit the doors to swing flat against the

side of the body and to be latched in open position.

The bodies are available in either closed or open-top models, and combination side and rear door arrangements are flexible to fit purchaser's requirements. With the options available, there are more than 500 basic combinations possible in the line.

Side and rear door options include single side door; double side doors; without side doors; narrow double rear doors; full-width double rear doors; no rear doors; express-gate rear; tailgate rear and solid rear.

The steel roof of the closed bodies is virtually one solid sheet of metal. It is made up of sections of zinc-grip, galvanized roof material which are joined by coin-pressed seams. These interlocking seams are dirt, rust, and weather-proof under all conditions, yet any section may be easily re-

moved and replaced in the event of damage.

Fruehauf's skeleton-structure employs rectangular steel tubing for the framing.

With this high-tensile steel alloy tubing, every structural part is a functional part, contributing to the load carrying ability of the body. Steel rub-rails are pressed out as an integral part of the body to protect body sides and rear.

Interior lining is of plywood, extending 3 feet from the floor with slats above and plywood lined roof.

The floor features high-tensile steel "hat" sections running the full length of the body and securely welded to sturdy die-formed steel crossmembers. 1 1/16-in. flooring is fitted snugly between the steel sections. In addition to increased strength and rigidity and greater wearing quality, this construction simplifies floor replacement.

Directional signals and tail lights are deluxe type and are recessed behind the sturdy rear rub-rail for protection against damage.

Complete assembly sets, as well as replacement units will be stocked by Fruehauf's nation-wide network of factory branches. All units are shipped from the factory prime-coated, and ready for final painting.

Installation may be handled by the Fruehauf branch, in the customer's own shop or by any truck dealer. A body can be assembled and painted in approximately 10 man-hours, with only ten assembly operations. No special tools are needed and only minimum welding is required.



You take big slices off your delivery costs with this modernly engineered Studebaker truck

IT'S a handsome truck to look at. It's a beauty of a performer. But the pay-off distinction of this hustling, husky, heavy-duty-model Studebaker truck is its low-cost mileage.

That's why many of the nation's most exacting truck buyers rate it right at the top.

Powered by Hy-Mileage engine

The big savings that this Studebaker truck chalks up begin with its fine 6-cylinder power plant—well-named "Hy-Mileage" engine.

That engine is a triumph of years of intensive truck-thrift research. It's an honor graduate of Studebaker's great technical laboratories and million-dollar proving ground.

And not just the engine, but all the rest of the truck from the wheels on up, has also gone through the same thorough pre-testing.

Plenty of stand-out features

In this heavy-duty model and all other Studebaker trucks, plenty of modern performance helps are included in the list price.

Among these are automatic choke, automatic spark control, oil bath air cleaner, adjustable octane selector, oil filter.

Moreover, each cab has a dome light; adjustable window wings; two arm rests and adjustable seat; dual sun visors; dual windshield wipers; tight-gripping rotary door latches—all at no extra cost.

Plenty of people want all this value that Studebaker trucks offer. So be forehanded. Get in touch with the nearest Studebaker dealer.

STUDEBAKER

Builder of trucks you can trust

The Studebaker Corporation, South Bend 27, Indiana, U.S.A.



"It rides more comfortably than any truck I ever drove!"

Yes, many drivers all over the nation say they find Studebaker trucks far in front of all others in comfort. The cabs are roomy; the seats are restful; the floors are clear; the pressure shift is easy; and Studebaker's exclusive variable ratio steering gear makes parking much simpler.

CCJ QUIZ

by ROBERT F. BAHL



These ten questions involve some very pertinent facts about highway accidents. Each correct answer is worth 10 points in arriving at your score (you're aiming at 100). If you don't know for sure, take a good guess. You might accidentally hit it right. Answers are on page 89.

1.

Are trucks more dangerous than passenger cars? One out of 24 passenger cars was involved in an accident last year. For trucks, the ratio was . . .

- a. 1 out of 13
- b. 1 out of 20
- c. 1 out of 31
- d. 1 out of 45

2.

If an atom bomb wiped out an entire city, there would be an awful commotion, yet each year traffic fatalities equal the population of . . .

- a. Ashtabula, Ohio
- b. Bismarck, N. Dak.
- c. Detroit, Mich.
- d. Albuquerque, N. Mex.

3.

If you were to check all traffic accidents last year, you would find that the most dangerous day of the week was . . .

- a. Sunday
- b. Tuesday
- c. Thursday
- d. Saturday

4.

In addition to being famous for its beer, this city was distinguished for having the best safety record of any large city last year . . .

- a. St. Louis
- b. Minneapolis
- c. Milwaukee
- d. Cincinnati

5.

More than one out of four of the pedestrians who were killed last year would still be alive if they had not . . .

- a. Crossed between intersections.
- b. Walked on the wrong side of the highway.
- c. Stepped from behind a parked car.
- d. Crossed against the light.

6.

True or false—the persons injured in motor vehicle accidents each year

JOBSERVATIONS

by Buster Rothman

If you look back too much you will soon be heading that way.

★ ★ ★

Take a lesson from the woodpecker: he uses his head when he works.

★ ★ ★

A hen is the only creature on earth that can sit still and produce a dividend.

★ ★ ★

Up to his neck a man is only worth the price of a day's labor.

★ ★ ★

And if you are thinking of revenge, remember it's better to get ahead than to get even.

7.

would be enough to fill every hospital bed in the nation?

- a. True
- b. False

Two-thirds of all accidents last year involved faults of drivers. The one cause accounting for more accidents than any other was . . .

- a. Exceeding the speed limit.
- b. Reckless driving.
- c. Failure to have right-of-way.
- d. Passing on curve or hill.

8.

What is the danger hour? The greatest number of traffic deaths occur between . . .

- a. 8 a.m. and 9 a.m.
- b. 12 noon and 1 p.m.
- c. 7 p.m. and 8 p.m.
- d. 1 a.m. and 2 a.m.

9.

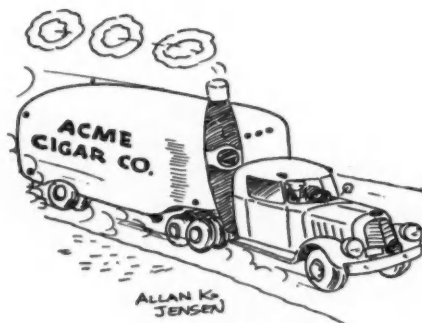
The grim reaper takes his greatest harvest of victims . . .

- a. On rural highways.
- b. At railroad crossings.
- c. Between intersections.
- d. At street intersections.

10.

When boy meets girl, it often ends up with "they lived happily ever after." When car meets something else, it often ends up with someone not living at all afterwards. Tell us, which type of collision accounts for the most deaths and injuries . . .

- a. Car meets another car.
- b. Car meets pedestrian.
- c. Car meets railroad train.
- d. Car meets fixed object.



★ SCORE CARD

1	2	3	4	5	6	7	8	9	10
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**YOU KNOW WHAT "FRUEHAUF" MEANS
ON A TRAILER . . . NOW, THE SAME ENGINEERING
SKILL BRINGS YOU BETTER TRUCK BODIES!**

The "know-how" that has made Fruehauf the world's largest builders of Truck-Trailers, now has developed new all-steel truck bodies in 3 popular sizes. And Fruehauf's tremendous production facilities bring you top-quality construction at lowest prices.

Fruehauf's nation-wide network of Factory Branches simplifies distribution and backs sales with a new type of Factory Service.

Fruehauf Factory Branch stocks solve the delivery problem everywhere. See these bodies now on display at your Fruehauf Branch.

SPECIFY FRUEHAUF...
The Name that Carries Weight!

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DETROIT 32
67 Factory Service Branches

FRUEHAUF BODY FEATURES

- 12-14-16-ft. sizes available now.
- Side and rear door design to fit your need.
- All-Steel, Aerovan-type construction, including doors.
- Heavy-duty Trailer-type cam locks on doors.
- Exceptional strength—yet light in weight.
- Fruehauf's famous Steel-Ribbed reinforced 1-1/16 inch flooring.
- Available with open or closed tops.
- One-Piece reinforced roof coving.
- Fruehauf Branches relieve you of all assembly and mounting work. Also available K.D.



FRUEHAUF

TRUCK BODIES



LAUGH IT OFF

Three little pigs lined up before the bar in a roadside tavern. "Make mine an Old Fashioned," grunted the first porker. "And mine a Tom Collins," squealed the second. "Gimme five quarts of beer," demanded the third.

"You don't want five quarts!" protested the bartender as he dropped his towel to stare at the imperious one. "You couldn't possible drink all that beer!"

"It's plain you don't know who I am," indignantly retorted the third pig, thumping himself where his chest ought to have been: "I'm the little pig who went wee, wee, wee, all the way home."

C C J

Woman customer (in bank): "I would like to make a loan."

Bank Official: "You'll have to see the loan arranger."

Woman: "Whq?"

Official: "The loan arranger! The loan arranger!"

Woman: "Oh, you mean the one who says, Hi-Ho Silver?"

C C J

SAFETY SADIE: "I UNDERSTAND THAT MARJORY IS GOING WEST THIS SUMMER TO START A CHICKEN RANCH."

CATTY CORA: "NO SHE ISN'T. . . I HAVE IT ON GOOD AUTHORITY THAT SHE IS JUST GOING TO RENO TO CHANGE ROOSTERS."

C C J

A somewhat supercilious batchelor was invited to dinner by a lady of his acquaintance, but did not accept. A few days later, seeing her at a party, he strolled over. "I believe you asked me to dine with you last week," he said in his best manner.

The lady looked at him thoughtfully. "Why yes, I believe I did," she answered brightly. "And did you come?"

C C J

The driver of the long-distance moving van was laying over for the night to await a return load. Dejectedly, he sat slumped on a park bench while pleasure-bent couples passed by on parade. Thinking to be of service, the park policeman stopped and inquired: "Anything wrong, son?"

Driver: "I'm listless."

Cop: "Lost your pep?"

Driver: "No, my list of phone numbers for this town."

"What does the expression 'Sez you' mean?" asked the judge.

The clerk of the court replied: "My lord, it appears that this is a slang expression of American origin which has gained regrettable currency in the language of our people through the insidious agency of the cinema, and is, I am led to understand, employed to indicate a state of dubiety in the mind of the speaker as to the veracity or creditability of a statement made to him."

"Oh, yeah" said the judge.

C C J

IT'S TOUGH TO FIND
FOR LOVE OR MONEY,
A JOKE THAT'S CLEAN
AND ALSO FUNNY.

C C J

Two glamor girls boarded a crowded city transportation bus and one of them whispered to the other: "Watch me embarrass a seat from one of the men!" Pushing her way down through the standees she bore down on a sittee who looked substantial and embarrassable.

"My dear Mr. Brown," she gushed loudly. "Fancy meeting you on the bus. Am I glad to see you! Why, you are almost a stranger. My, I'm tired!"

The sedate gentleman looked up at the girl, whom he had never seen in his life before, and as he rose, said pleasantly and for all to hear: "Sit down, Bertha, my girl. Don't often see you out on washday. No wonder you're tired. By the way, don't deliver the washing until Wednesday. My wife is going to the prosecuting attorney's office to see whether she can get your husband out of jail!"



"This one's for beginners. It's built to go in circles."

Catty Cora, the caustic tongued steno who usually comes to work dressed in the latest "whistle bait" raiment, came in the other morning looking like something the cat dragged in. Spying her overflowing wastebasket, she grabbed it and dashed for the loading dock in an attempt to catch the garbage man who was just pulling out.

"Yoo, hoo," she yelled, "am I too late for the garbage?"

"No ma'am," retorted the G.M., noting her disheveled appearance, "jump right in."

C C J

1st. Mechanic: "Was your friend shocked over the death of his mother-in-law?"

2nd. Ditto: "Shocked., He was electrocuted."

C C J

The Claim Agent's six-year-old was taken to church for the first time. After she returned home her daddy asked her how she liked church. She answered: "I liked the music okay but the commercial was too doggone long."

C C J

A subway was being dug. A drunk stopped beside the excavation and called down to the man at the bottom of the pit: "Shay, watcha' doin' down there?"

"Building a subway."

"How long's it gonna take to build it?"

"Three years."

"To heck with it," stormed the drunk. "I can't wait. I'll jush take a taxi."

C C J

MARC: "I'LL NEVER GO FISHING WITH THAT MAN AGAIN!"

MERT: "MIGOSH! WHAT DID HE DO?"

MARC: "FISHED."

C C J

Junior: "Daddy, do lawyers ever tell the truth?"

Daddy: "Yes, son, sometimes a lawyer will do anything to win a case."

C C J

The timid customer squirmed and fidgeted. Finally he beckoned the waitress and, looking embarrassed, he said, "Could you tell me where the smoking room is?"

"Oh," the waitress replied, "you can smoke right here at the table."

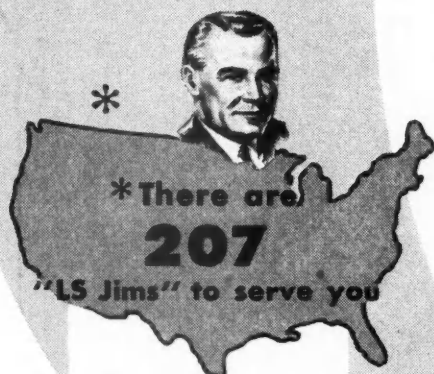
Part of the New Fleet of Lindsay Bodies Built for Peter Fox Brewing Company by General Body Sales Company, Chicago.



for

7 GOOD REASONS

ANOTHER BIG FLEET SPECIFIED LINDSAY TRUCK BODIES



"Jim," a neighbor of yours, was chosen an LS Body Builder because of his ability to handle your requirements intelligently—whether you need one or a thousand truck bodies.

Your "Jim" can design a body to meet your exact requirements—make speedy deliveries and a quick factory repair job.

1. EASE OF REPAIR. A Lindsay body can be repaired quickly—damaged panels easily removed—replacements available from warehouse stocks.

2. NATIONWIDE SERVICE. There are 207 authorized Lindsay Body Builders, thus, you can get complete factory service on any Lindsay body any place in the country. Your branch offices can also buy new bodies locally and know that they conform in every way to your standard specifications.

3. SPEED OF DELIVERY. Lindsay bodies—one or a hundred—are built in record time. This modern method of assembly is ideal for line production.

4. STRENGTH & SAFETY. LS has an amazingly high strength-weight ratio. A Lindsay body withstands wear—saves weight—increases payload.

5. APPEARANCE. The rugged beauty of LS is adaptable to your individual design requirements.

6. UNIFORMITY. Units in your fleet can be identical yet built in entirely different parts of the country.

7. EXPERIENCE. Lindsay bodies stand the test of actual service. The strongest and most frequently heard reason given for the purchase of Lindsay bodies last year was—"We've used them before."

Let us tell you all about Lindsay bodies.

LINDSAY



STRUCTURE

U.S. Patents 2017629, 2263510, 2263511
U.S. and Foreign Patents and Patents Pending

The Lindsay Corporation, 1724 25th Ave.,
Melrose Park, Ill. Sales Offices: Chicago,
New York, Atlanta, San Francisco

DISTRIBUTORS AND BUILDERS IN ALL PARTS OF THE COUNTRY

New Truck Registrations by Makes and States*

April and Four Months of 1947 and Completed Totals for Jan., Feb. and March.

STATE	Auto-car	Brook-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Mack	Osh-kosh	Reo	Ster-ling	Stude-baker	Ward La France	White	Willys	All Others	Total	
Alabama	April		579	7	2	243	5	354		104	307	4		29		44	1	22	117	6	1,824	
4 Mos.	2	1,992	32	10	816	28	1,485	1	401	794	27		117		184	1	66	354	29	6,339		
Arizona	April		73	4	1	46	1	78		22	28		7		21		4	17	7	309		
4 Mos.	4	323	8	1	151	9	294		89	87	1		37	2	59		11	63	17	1,182		
Arkansas	April		1,130	19		374	6	925		172	361	3		16		139		17	141	5	3,308	
4 Mos.	4	1,709	29		583	11	1,466		283	497	6		25		203		29	212	8	5,066		
California	April	48	3	1497	47	56	860	13	1253	13	499	657	33		47	10	358	53	187	83	5,722	
4 Mos.	138	19	5105	147	128	2423	45	3874	77	1655	2059	66		217	30	1147	1	169	596	274	18,180	
Colorado	April	1		193	7	6	102	4	197	9	144	8		14		51		14	45	7	852	
4 Mos.	6		766	42	17	378	16	819	42	188	416	13		38		151		22	136	21	3,071	
Connecticut	April	20		184	12	7	92	11	141	1	41	121	30		12		49		21	32	9	802
4 Mos.	88	57	716	40	20	378	50	410	6	160	381	85		45	2	130		58	97	35	2,758	
Delaware	April	6		66	2		76		82	10	55	6		2		6		3	4	3	326	
4 Mos.	11	10	259	6	1	191	1	235	1	59	135	8		7		36		13	25	5	1,003	
Dist. of Col.	April	1		69	11	19	52		75	21	54	1		4		11		12	2		335	
4 Mos.	2	10	273	19	51	192	5	262	1	87	148	17		16		38		22	5	5	1,152	
Florida	April	5		383	16		117	3	282	1	51	97	10		12		40		12	58	5	1,072
4 Mos.	16		1,842	49	3	640	31	1,450	20	295	567	66		74		195		69	246	24	5,587	
Georgia	April																					
Idaho	April			198	7	1	71	5	162	1	49	88	1		7		49		3	33	8	682
4 Mos.			583	16	2	191	10	379	1	115	226	2		26		101		5	82	22	1,742	
Illinois	April	39	10	1,166	102	35	658	27	985	237	536	40		82	1	190		82	91	32	4,315	
4 Mos.	122	38	5,272	410	123	2,732	90	3,941	7	1,098	2,287	114		339	5	851	2	257	470	164	18,322	
Indiana	April	1	14	400	32	7	274	14	444	3	113	303	9		41		151		31	71	16	1,924
4 Mos.	21	68	1,938	144	63	1,259	50	1,804	4	572	1,213	65		183		615		126	289	87	8,501	
Iowa	April	3	1	454	26	5	249	7	405	3	66	282	17		29		136		21	160	7	1,871
4 Mos.	3	2	1,872	88	15	914	20	1,618	6	278	936	55		118		354	1	51	411	30	6,772	
Kansas	April			480	19		172	10	407	1	76	273	4		27		75		18	15	1	1,558
4 Mos.	3	1	2,032	70	16	620	43	1,476	1	289	784	7		80		365		57	87	24	5,955	
Kentucky	April	5		521	16	4	282	16	469	129	286	12		34		84		20	117	8	2,003	
4 Mos.	8		1,375	41	8	703	29	1,161		297	730	28		87		214		43	315	21	5,060	
Louisiana	April																					
Maine	April	10	5	387	9	4	166	11	376	3	60	153	13	2	15	3	37		8	24	13	1,299
4 Mos.	18	10	565	10	5	306	19	674	5	145	274	35	4	28	3	99		35	47	20	2,292	
Maryland	April	2	14	327	9	17	173	11	259	77	196	25		30		55	4	14	45	7	1,265	
4 Mos.	29	42	1,217	22	4	622	35	886		277	548	61		107		164	11	65	119	22	4,238	
Massachusetts	April	14	15	322	13	12	201	8	283	76	131	43		20	5	35	1	19	4	3	1,205	
4 Mos.	22	24	585	34	41	370	13	611		135	250	63		47	9	64	1	39	89	8	2,405	
Michigan	April	15	2	577	29	29	572	65	787	170	282	14		60		126	1	45	117	32	2,923	
4 Mos.	32	13	2,662	121	120	1,925	160	2,821	1	630	904	41		296		451	9	80	438	115	10,820	
Minnesota	April	4		621	14	6	148	7	549	3	92	224	17		2		28	2	8	13	5	1,743
4 Mos.	10	2	1,843	77	31	874	47	1,595	17	310	866	43	2	41		234	8	72	114	25	6,211	
Mississippi	April	1		428	13		201	8	347	79	141	2		11		46		7	116	2	1,402	
4 Mos.	2		1,876	29	2	668	19	1,363		271	494	11		45		197		41	322	8	5,348	
Missouri	April																					
Montana	April			226	9		106		155	1	35	108	1		8		46			104	9	806
4 Mos.			716	29	3	376	4	550	2	123	323	1		23		147		11	242	17	2,567	
Nebraska	April			188		120	10	293		53	144	11		9		56		21	83	1	915	
4 Mos.	3		1,020	79		516	23	951	4	197	597	50		55		213		76	282	8	4,054	
Nevada	April	1		33		22	1	28		13	17			6	1	6			10	3	142	
4 Mos.	3		104	3	1	57	1	116	1	36	83			7	1	27		1	29	8	438	
New Hampshire	April	5	4	98	7	1	61	5	114	18	52	17		13	9	19		11	7	3	444	
4 Mos.	17	6	352	18	7	264	9	339		91	182	47		51	12	88		34	89	15	1,621	
New Jersey	April	49	49	595	24	25	263	21	428	3	120	206	69		29		76	4	39	68	22	2,090
4 Mos.	150	155	1,656	85	69	878	58	1,325	3	436	747	208		65		247	20	129	176	67	6,474	
New Mexico	April			143	7		56	3	84	1	33	41	5		5		19		5	5	2	409
4 Mos.			475	20		184	5	278	5	108	132	12		10		69	1	13	36	6	1,354	
New York	April	107	148	921	126	75	865	52	1008	5	420	772	263	10	120	11	278	16	133	184	59	5,573
4 Mos.	414	620	4,679	368	166	3,488	208	4,078	50	1,314	2,554	691	34	398	41	821	100	975	731	253	21,503	
North Carolina	April	4	1	794	23	7	435	20	742	3	120	288	21		64		152	1	33	168	14	2,890
4 Mos.	20	7	2,485	44	15	942	56	1,781	9	257	656	86		166		350	1	120	339	38	7,372	
North Dakota	April			192	5		89		164	2	34	105	5		6		47		2	25		676
4 Mos.	2		336	10		170	298		2	57	191	5		14		84		4	71	2	1,247	
Ohio	April	21	6	755	38	37	676	32	1,006	2	266	613	56		97		180	1	169	550	47	4,542
4 Mos.	119	34	3,300	166	153	2,554	136	3,479	16	1,004	2,648	228		334		666	7	413	863	158	15,679	
Oklahoma	April			499	4	2	230	5	363	2	85	236	16		20		76		11	58	4	1,808
4 Mos.			1,696	12	7	832	17	1,348	5	281	728	33		60		247		51	181	15	5,513	
Oregon	April	3		332	24	8	190	15	208	73	119	13		17		69		14	77	5	1,165	
4 Mos.	8		1,230	89	20	633	46	803	4	310	490	21		49		279		50	258	45	4,343	
Pennsylvania	April	60	81	1,115	58	20	823	44	1,052	2	287	765	100	5	121	9	285	19	113	193	30	5,171
4 Mos.	239	307	3,911	230	65	2,972	154	3,515	27	1,042	2,433	317	22	361	35	812	37	426	590	119	17,614	
Rhode Island	April	6	3	77		7	44	2	66	25	27	5		7	1	11		4	12	1	298	
4 Mos.	37	4	336	13	29	148	4	245	2	86	104	20		10	3	43		17	34	10	1,145	
South Carolina	April			253	5		164	4	214		52	100	4		20		36		15	56	11	834
4 Mos.	2		1,153	17		588	10	983		177	311	21		83		143		55	217	34	3,794	
South Dakota	April	2		123	8		74		110	1	34	80	3			22		5	63	4	539	
4 Mos.	5		359	23		279	3	388	6	97	243	9		30		72		11	143	6	1,674	
Tennessee	April			710	10	1	344	16	476	7	158	320	10		34		65	1	15	128	20	2,320
4 Mos.	10	14	3,138	65	24	1,437	101	2,200	14	812	1,212	75		159	3	391	2	131	530	62	10,380</	

To your health!



America's 7-billion-dollar dairy industry benefits the health of every family in the land... supports one of every 15 families! Milk and its by-products comprise more than 25% of the foods consumed by the average U. S. person. Chemical research is constantly finding new uses for better living... from foods to plastics and pharmaceuticals.

PURE SWEET MILK...universally available... is an American symbol of healthful living. Behind the fact that more than 200 quarts are consumed annually by the average man, woman and child in this country is one of the most amazingly efficient distribution systems ever developed. Vital to its daily functioning are more than 100,000



motor trucks — many of which are White Super Power Trucks, preferred for their complete reliability and economy. Correctly selected for the specific work they do, properly maintained and skillfully manned, White Super Power Trucks are precision tools of transportation. These three factors will increase truck efficiency

for any business, large or small. They are the basis of The Continuing Control System of Truck Management. Your White Representative will gladly explain how this System can be applied to your advantage.

THE WHITE MOTOR COMPANY

Cleveland, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA, LIMITED
Factory at Montreal

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

83



Major ICC Revisions Opposed ICC Requires Stencils Size & Weight Study Bogs

Major ICC Revisions Opposed

The informal conferences on the proposed revisions of the ICC Motor Carrier Safety regulations have revealed opposition from the three groups that had been heard before July 1. The carriers were found to be in substantial opposition to major changes in most of the parts; the insurance organizations were generally in favor of the proposed changes, but objected to several minor points; and the manufacturers of vehicles and equipment followed the line of the carriers generally, but particularly opposed the changes in Part 3 on the grounds that the Commission was attempting to design vehicles rather than dictate end results.

While these differences may appear serious on the surface this is probably not the case. There is a definite feeling among carriers and manufacturers that the ICC purposely prepared extremely stringent drafts so that bargaining would be easier.

These conferences are concerned only with Parts 1 to 6 of the regulations. Conferences on the proposed Part 7, made public July 1, will be held during the fall.

This portion of the regs, dealing with explosives and other dangerous articles, restores the original method of handling these materials and should end the confusion as to jurisdiction, as well as put all rules in one package. Included is a section dealing with the transportation of radioactive materials, which would rule out the sadly inadequate proposed order put out by the ICC Bureau of Service (CCJ, April 1947, p. 136). This latter proposal which has not become effective, was blasted by complaints, and it is now admitted that it was technically incorrect in many respects. In addition, there is a section in the new draft of Part 7 which would go a long way toward minimizing the chances of another disaster involving ammonium nitrate such as occurred at Texas City, Tex.

At the conference with carrier groups the western states operators withdrew their petition for abrogation of the rule requiring front-wheel brakes on large vehicles. This problem has been thrown into the pot to be thrashed out as part of the overall revision of the regulations.

The ICC has also stayed until Aug. 18 the effective date of its order prohibiting the use of dual saddle-mounts.

by GENE HARDY
CCJ Washington Bureau

ICC Requires Stencils

Division 5 of the I.C.C. has issued an order prohibiting the use of identification plates by motor carriers after September 1, 1947 and substituting a stencil method of identification for carriers operating under Commission authority. Div. 5 has ordered that such stencils should carry the name or trade name of the motor carrier under whose authority the vehicle or vehicles is or are being operated and the certificate permit or docket number assigned to such operating authority be displayed, and that the number prescribed in the order must be lettered or figured in sharp color contrast to the background and be of such size, shape and color as to be readily legible during daylight hours from a distance of 50 ft. while the vehicle is not in motion. Such display may also be accomplished through the use of a removable device. If a removable device is used on vehicles in driveway service it either may be affixed on both sides or at the rear of a singly driven vehicle.

Size & Weight Study Bogs

The Committee on the Economics of Motor Vehicle Sizes and Weights of the Highway Research Board has been moving rather slowly in its long-range, fact-finding survey of the economic and engineering factors affecting optimum vehicle sizes. While it had hoped to begin tests on the Pennsylvania Turnpike by midsummer, it does not appear likely that this will be accomplished since at the end of June a subcommittee to work out details of these tests had not been appointed.

5-Year Census—Eventually

Congressional authorization for a five-year census of business and industry including all forms of transportation not now adequately covered seemed assured as this issue of CCJ went to the printers. However, the legislation merely authorizes the director of the census to undertake such projects but does not provide the necessary funds. This problem will have to be ironed out at the next session of Congress.

5-Year Census — Eventually Trailer Production Level Little Hope for Excise Cut

Trailer Production Level

Census Bureau reports on truck-trailer production are now lagging so far behind that there is little use in attempting to evaluate current trends within the industry. At the end of June the latest report available by the Bureau of Census showed production of truck trailers during March totaled 5942 units, a drop of 10 per cent of the 6570 units produced in February, and a continuous downward trend since the first of the year. However, it is expected that the April report will show a reversal of this trend with production leveling off. The Truck Trailer Manufacturers Association points out that the Census report for March indicates that shipments exceeded production by 858 units. The Association states that the term "shipments" as used by Census refers to shipments from manufacturing plants and therefore is not necessarily synonymous with retail deliveries.

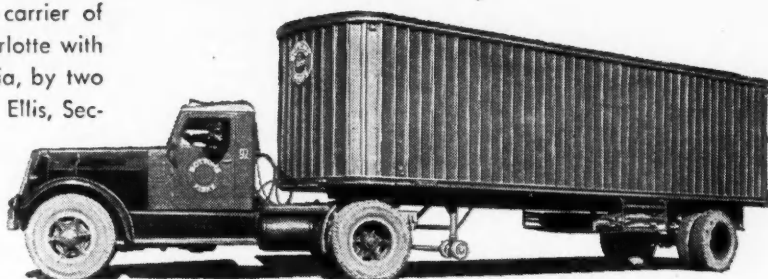
Little Hope for Excise Cut

While immediate repeal or reduction of all excises affecting automotive product users has been asked by manufacturers, carriers and highway user groups, Congress will not act at this session. The hearings before the House Ways and Means Committee have been purely exploratory, so as to give Congress sufficient information to act intelligently at the next session. In fact, proponents of such a move are not sure that their pleas will receive favorable treatment at the session which opens in January, due to the imminent multibillion dollar foreign rehabilitation program. Gaining strength in the Capital is the report that excises may be increased or at best remain at current levels, in order to provide as much revenue as possible for such a program. The reason for the report is the obvious political danger in increasing income taxes, if more revenue is needed, and the ease with which excises can be collected.

The fact that automotive excise collections continue to increase will not make the task of the advocates of repeal or reduction any easier. For example, April gas tax revenue was up \$1,000,000 over 1946 to \$33,957,000 and auto and motorcycle excises were up almost \$14,000,000 to \$19,197,000.

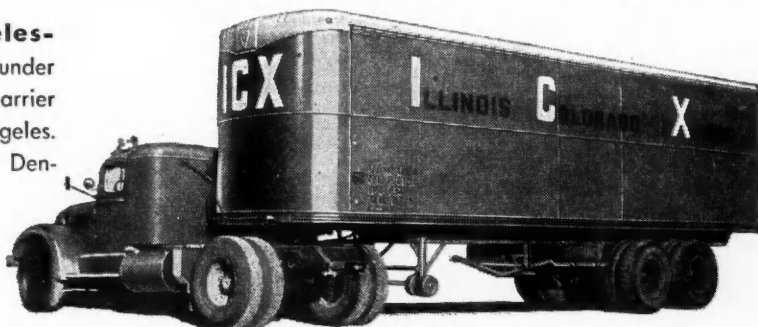
(TURN TO PAGE 260, PLEASE)

Bottoms-Fiske Trucking Inc., a common carrier of **High Point, North Carolina,** connects Charlotte with the important shipping point of Norfolk, Virginia, by two routes. This company's drivers, states Mr. C. H. Ellis, Secretary, are enthusiastic over Trailmobile's ease of handling. Mr. Ellis also praises Trailmobile strength of construction, saying that Trailmobile sides hold up exceptionally well even under unusual stress and strain.



Lone Star Bag & Bagging Co., Inc., Houston, Texas, one of the leading Burlap and Cotton Bag suppliers in the Southwest area, makes deliveries to all main cotton packing centers. Mr. W. W. Lesser, Vice-President, reports that over a full two year period, Trailmobile has conclusively proved that it is "easier and better to pull." This saves gas, permits larger pay-loads. He also has found Trailmobile Branch Service to be superior in every department.

Illinois-Colorado Express—Los Angeles-Albuquerque Express. These lines, both under the same management, operate a common carrier service from Chicago through Denver to Los Angeles. Clyde M. Hamilton, Equipment Superintendent, Denver, says that he is pleased with the "easy pull" of Trailmobile. This important advantage plus the good Branch Service, has "sold" Mr. Hamilton on Trailmobile's economical performance.



For the Smoothest, "Easiest Pull"

The Trend is to TRAILMOBILE

Why are so many trailer operators switching more and more to Trailmobile? The "easiest-pulling undercarriage in the industry" is one important reason! Specially engineered features save tires, reduce upkeep, cut maintenance costs, give longer-lasting, more efficient trailer service. See what the companies above have to say about Trailmobile.

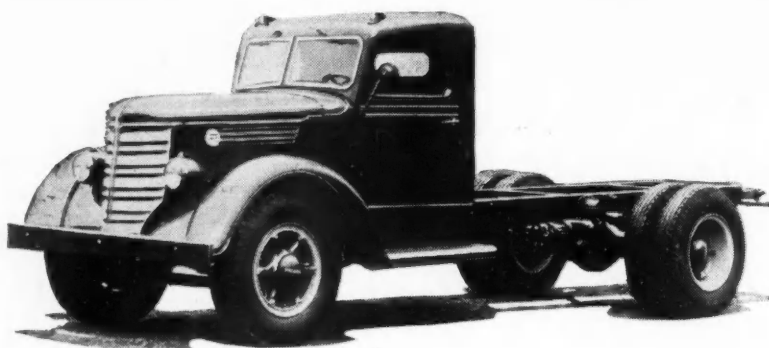
But this amazing ease-of-pull is only one of many Trailmobile con-

tributions to more profitable trailer operation. Guided by Trailmobile's exclusive electronic stress-testing devices, new structural advances cut weight while adding strength throughout the body. A unique new tandem uses newly found principles that reduce tandem moving parts to two. And, 50% more efficiency is

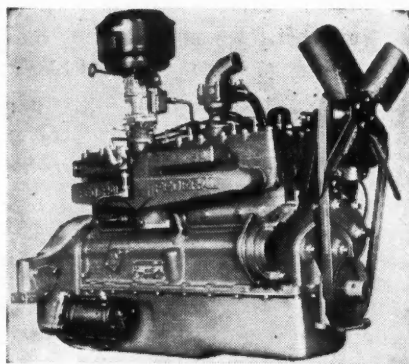
found in a new Prop. Everywhere you look, Trailmobile blazes new trails in trailer development!

On top of this, Trailmobile gives you friendly, efficient service through 73 Customer Service Centers coast-to-coast. Why not find out more about the TREND TO TRAILMOBILE? Call your nearest Trailmobile Branch.

THE TRAILMOBILE COMPANY — CINCINNATI 9, OHIO



Model 29ML Federal has a larger engine to develop faster acceleration and higher speeds with capacity payloads. Wheelbase, this model, 167 in



Right hand view of JXD Hercules engine for 29 Series. Note ventilator

FEDERAL

Introduces Five New Models

**Series 25, 29ML have larger engine with
7-bearing crankshaft, improved cam lifts,
crankcase ventilator, oil bath breather**

TWO SERIES—the 25 and the 29ML—comprising five new truck models have been added to the line of the Federal Motor Truck Co., Detroit, Mich., rounding out its balanced post-war truck series. The 25 Series, consisting of Models 25M and 25M2, has a nominal rating of 2½ to 3½ tons, g.v.w. of 17,500 lb., and g.t.w. of 32,000 lb. for truck-trailer combinations.

The 29ML Series, consisting of Models 29ML, 29ML2, and 29MLA, has the same rating as the present 29M Series and is similar to the 29M in many respects. Distinctive feature of the new models is a larger Hercules engine to assure faster acceleration and higher sustained speeds with capacity payloads, thus making them particularly well suited for tractor-trailer operations. Depending upon the combinations of gear ratios and axles these models

have a theoretical road speed from 55 to 64 m.p.h. This series has a nominal rating of 3 to 4 ton, g.v.w. rating of 20,000 lb., and g.t.w. rating of 36,000 lb. for truck-trailer combinations.

Improved Engine

THE 25M Series models are equipped with the Hercules JXC(F) gasoline engine modified for Federal to include a Tocco-hardened, seven-bearing counterweighted and balanced crankshaft and special manifold. In addition these engines

CONDENSED ENGINE SPECIFICATIONS

	Hercules JXC (F)	Hercules JXLD (F)
No. cylinders....	6	6
Bore.....	3¾ in.	4 in.
Stroke.....	4¼ in.	4½ in.
Displacement....	282 cu. in.	339 cu. in.
Max. Brake hp....	102 hp. at 3000 r.p.m.	119 hp. at 2800 r.p.m.
Max. Torque.....	212 lb. ft. at 1400 r.p.m.	264 lb. ft. at 1200 r.p.m.
Comp. Ratio....	6.5 to 1	6.5

are provided with high speed high lift cams and a high compression cylinder head. Carburetor is a Carter 1½ in., downdraft, equipped with an oilbath air cleaner. An oil filter with replaceable cartridge is standard. Crankcase capacity is 9 qt. The crankcase is fitted with a ventilating system including an oilbath breather. Four-ring pistons are of Zollner heavy-duty aluminum alloy.

A feature of the powerplant is the Borg & Beck Model 12E, 12-in. single plate clutch with a lining area of 139 sq. in., and torque capacity of 320 lb. ft.

The 29ML Series features the larger Hercules JXLY(F) gasoline engine with a seven-bearing Tocco-hardened, counterweighted and balanced crankshaft. It is fitted with aircraft quality high-lead bronze main and rod bearings, combination oil filter and oil cooler, high torque starting motor, full floating wrist pins, deep oil pan with 9-qt. capacity, and the Thompson-Products "Roto" valve mechanism on the exhaust valves. Another Federal feature is adoption of the larger Zenith 1¾-in. down-draft carburetor with oil bath air cleaner.

Engines are fitted with Zollner, four-ring, heavy-duty aluminum pistons and a crankcase ventilating system with an oil bath breather. The clutch on these power-plants is Borg & Beck Model 13E, 13-in. with a lining area of 178 sq. in. and torque capacity of 330 lb. ft.

The Clark Model 205-VO, five-speed overdrive transmission is standard equipment on all models except the 29MLA. The latter has the Clark 205-V five-speed direct drive main transmission in combination

(TURN TO PAGE 174, PLEASE)

Quiz Answers

CCJ Quiz on Page 78

1. c. In 1946, there were 180,270 commercial cars involved in accidents that resulted in deaths or injuries—1 out of 31 of all trucks registered. For the same year, 1,070,160 passenger cars got mixed up in accidents, about 1 out of every 24. These figures do not take into consideration the fact that the average truck is on the road a great deal more than most passenger cars and that trucks as a rule must be out regardless of the weather or condition of the roads.

2. d. Last year 33,900 died in traffic accidents, roughly the population of Albuquerque. In 1941, worst year on record, 40,000 were killed.

3. d. Saturday. Last year, for the first time since records have been kept, Saturday passed Sunday both in persons killed and persons injured in traffic accidents. Every other year Sunday was worst.

4. c. Milwaukee, of all cities with a population of half million or more, had the best record—only 3.2 deaths per 10,000 vehicles. New York City was worst with 11.2 killings per 10,000 vehicles.

5. a. 27½ per cent of all pedestrian fatalities—2770 victims—last year were caused by people crossing between intersections.

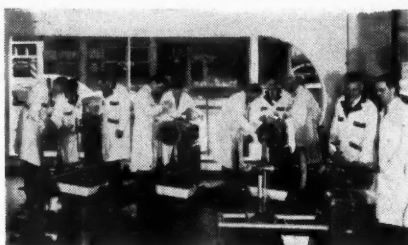
6. a. True. More than 1,300,000 persons were injured last year, slightly more than the capacity of the 5800 registered hospitals in the United States, federal hospitals excluded.

7. a. Speeding tops the list . . . both in deaths and in injuries.

8. c. 7 to 8 p.m. is the worst single hour as far as fatal accidents are concerned. 60 per cent of all persons killed in auto accidents meet death after darkness, even though there is normally only 25 per cent of the day's traffic on the roads at the time.

9. a. Greatest number of fatalities last year and most every year was on rural highways—on the straightaway. The reason—it's obvious—speed. Almost one-third of all traffic deaths last year occurred on the open highway, where high speeds are most prevalent.

10. a. Collisions between cars accounted for 32.3 per cent of all traffic deaths last year and 60 per cent of all traffic injuries.



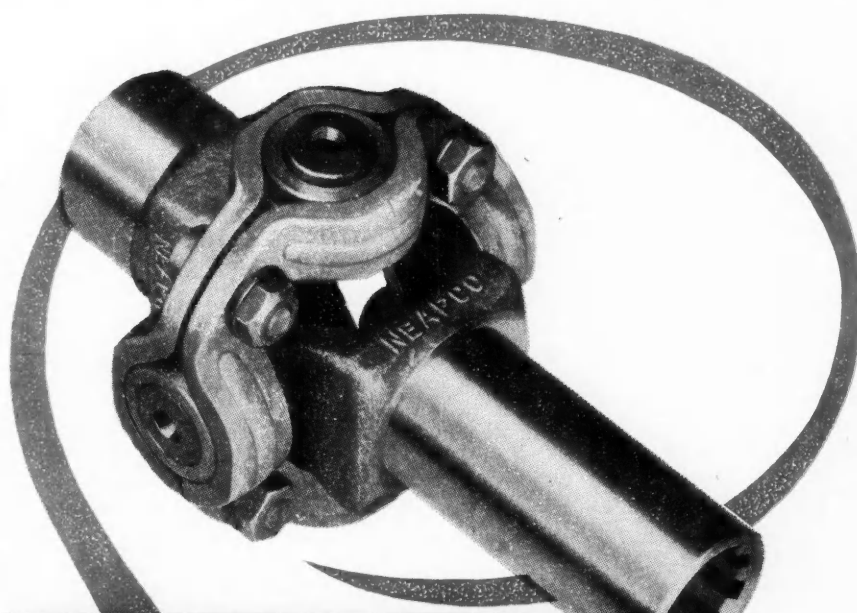
BARRETT BRAKE SCHOOL OPENS

Pilot classes are now being conducted at Barrett Brake School in St. Louis.

Various courses have been devised to accomplish the school's program. Quali-

fied for enrollment in the pilot classes are jobber salesmen and equipment specialists, representatives of car, truck, brake lining and component parts manufacturers, and experienced mechanics, shop foremen, service managers, and vocational or trade school instructors. Since instruction ranges from complete training to upgrading, the different courses vary in length from two to ten days.

Formal opening of the school is scheduled for this summer. However, applications for the pilot classes are now being accepted and classified for enrollment. Anyone interested should address School Director, Barrett Brake School, 2019 Cass Avenue, St. Louis, Mo.



3 Good Reasons for Installing NEAPCO'S SPLIT RING

HEAVIER RETAINING RINGS . . .

These heavier rings give this time-tested design greater torque capacity than ever. There is ample strength to carry the higher torques developed in the latest cars. To your customers it means greater satisfaction.

HARDENED and GROUND BEARINGS . . .

Hardening and grinding the bearings to closer tolerances reduces wear, adds longer service life to this Joint.

Neapco's Split Ring has received customer acceptance for nearly a generation; this improvement is a step toward even greater approval through longer service life.

INCREASED PRODUCTION . . .

Through increased production facilities more of these popular Joints are being manufactured than ever. Sizes in production for most Ford and Chevrolet passenger cars.

At Your Neapco Jobber's

America's most complete Independent Line of Universal Joints & Parts

NEW ENGLAND AUTO PRODUCTS CORP., POTTSTOWN, PA.



DETROIT



DISPATCH

Tire Gravy Train Over
New Models in Fall
Trailer Prices Softening

Tire Gravy Train Over

"We have seen the caboose of the gravy train go around the bend." That is how a large truck tire dealer in Detroit expressed the situation that now exists in the truck tire sales field. It has been known for some time that tire prices have been soft and this was given official confirmation when most of the major manufacturers reduced list prices late in June. Although there are variations in reductions among the manufacturers, the average is about 7 per cent on 15-in. and 16-in. casings, in 6.00, 7.00, 7.15, 7.50 sizes; 6.00, 6.50 and 7.00 20-in. tires have been reduced about 10 per cent. Reduction on large sizes, 8.25 and up is about 13 per cent. Tubes have been marked down 20 per cent.

Fleet operators report that actually the list price isn't nearly so important as it was many months ago because they now are in a much better bargaining position and have been able to get sizeable discounts. Some are reporting buying tires with as much as two tens off list and some even have obtained more of a discount depending on what level distribution they dealt with.

One company explains that a contributing factor toward lowering prices is that during the war the Government pushed many small companies into the truck tire business with allotments of rubber and that they now are remaining in business with facilities expanded with Government help during the war. Smaller companies have been the first to weaken the price structure so the major producers reduced their price in order to avoid a suicidal price war. However, the biggest reason is that supply and demand are practically in balance and the old competitive factor again is coming into play.

Actually, passenger car tire prices which were reduced a few weeks ago now list at slightly under the prewar level. It is understood that in both passenger and truck tire reductions, dealers are absorbing a large part of the markdown.

New Models in Fall

Latest information indicates that the new Ford truck models will appear sometime around October. Reo is expected to have a new model announcement in September.

by **LEN WESTRATE**
CCJ Detroit News Editor

Very little is known about the time of the Dodge model change, but reports are that there will be many significant changes in cab construction, possibly along the line of air conditioning or ventilation featured by Chevrolet in its current new models. A few weeks ago, it was thought that Nash would bring out its truck line sometime this summer. Latest evidence points to a delay until at least late this year. Lack of materials is said to be the cause for the postponement.

Trailer Prices Softening

Despite recent predictions of the Truck Trailer Manufacturers' Association, that there is little reason to expect any decline in trailer prices in the foreseeable future, there is definite evidence that all companies now are finding it is necessary to get out and beat the bushes for business. Trailer manufacturers have expanded their production capacity tremendously over the prewar level and it now looks as though a total of about 85,000 will be built this year. The original goal was 100,000. The industry already is talking about an intensive program to sell fleet operators on using more trailers per power unit through the shuttle plan whereby one trailer is loaded or unloaded while another trailer is being hauled to its destination. In general, fleet buyers are in a better position to talk price discounts on trailers than they have been for a long time.

Black Market Blow Up

The so-called "Black Market" in new cars and trucks in Detroit blew up with a bang in mid-June when the Michigan Attorney General's office started action against 10 used car dealers on charges of violating the State Licensing Law. The chief point of issue is whether or not used car dealers can sell vehicles with only a few miles on them as used cars. The State contends the vehicles are new cars, and that dealers must be licensed under the new car dealer registration. The used

Black Market Blow Up
Green Light for Designers
Life Expectancy Figures

car dealers contend that they are within the commonly accepted definition of used cars when they sell motor vehicles which have been transferred to individuals from a dealer. A clarification of legal wording will have to come before that point can be settled.

Some Detroit auto dealers now are requiring the purchaser to sign a contract specifying that if he wants to resell the car within six months the dealer will have first chance to buy it back at 10 per cent under the original purchase price. The dealer retains the title for the period of the contract.

There have been several cases where individuals and sometimes trucking companies have ordered new trucks and then for one reason or another disposed of them to used car lots. This practice has been most widespread in Ford, Chevrolet and Dodge light pickups and panel delivery models. There is no particular movement in heavy-duty lines which already are beginning to show signs of meeting demand.

Green Light for Designers

Sources close to the automotive industry say that following the decision to discontinue the Chevrolet light car program, other manufacturers are showing more inclination to go ahead with certain mechanical improvements they had been holding in abeyance. The belief is that the other companies now feel they are better able to go ahead with developments without fear of being undercut on price by a completely new, low-cost model.

Lift Expectancy Figures

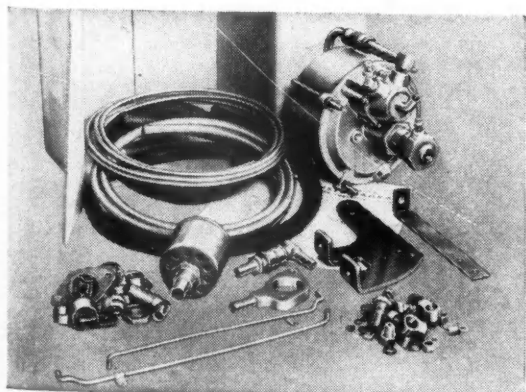
Ford Motor Company has come up with an interesting new wrinkle in its truck advertising. The company has engaged a firm of insurance company actuaries to get figures showing Ford truck "life expectancy" through scientific life insurance methods. J. D. Ball, director of truck and fleet sales for Ford, says that the figures show the company's trucks last up to 19.6 per cent longer than other makes. He said that certified results of the computation show the life expectancy to exceed the other four leading makes by 3.2 per cent, 7.6 per cent, 13.1 per cent, and 19.6 per cent.

IT PAYS TO STANDARDIZE ON

Bendix
FOR EVERY
POWER BRAKING
NEED!

BENDIX
VACUUM POWER
BRAKE EQUIPMENT
B-K . . . HYDROVAC

A Condensed Catalog of
Units and
Accessories



Hydrovac Installation Kit contains all the fittings and parts for complete installation. Any mechanic can do the job quickly and correctly.

When it comes to power braking, there's only one name you need to remember—BENDIX. For whether your problem involves heavy equipment or light—tractor or trailer—Bendix power braking equipment will do the job more efficiently and economically. The various sizes of Hydrovac*—world's widest-used power braking unit—and the many types of B-K equipment come to you in complete kits for simple and speedy installation. Complete instructions make the job easier, too. If your rolling equipment needs better stopping power, or if conversion is required—it will pay you well to standardize on Bendix—the first name in power braking.

*REG. U. S. PAT. OFF.

BENDIX PRODUCTS DIVISION of
SOUTH BEND 20, INDIANA



JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

91

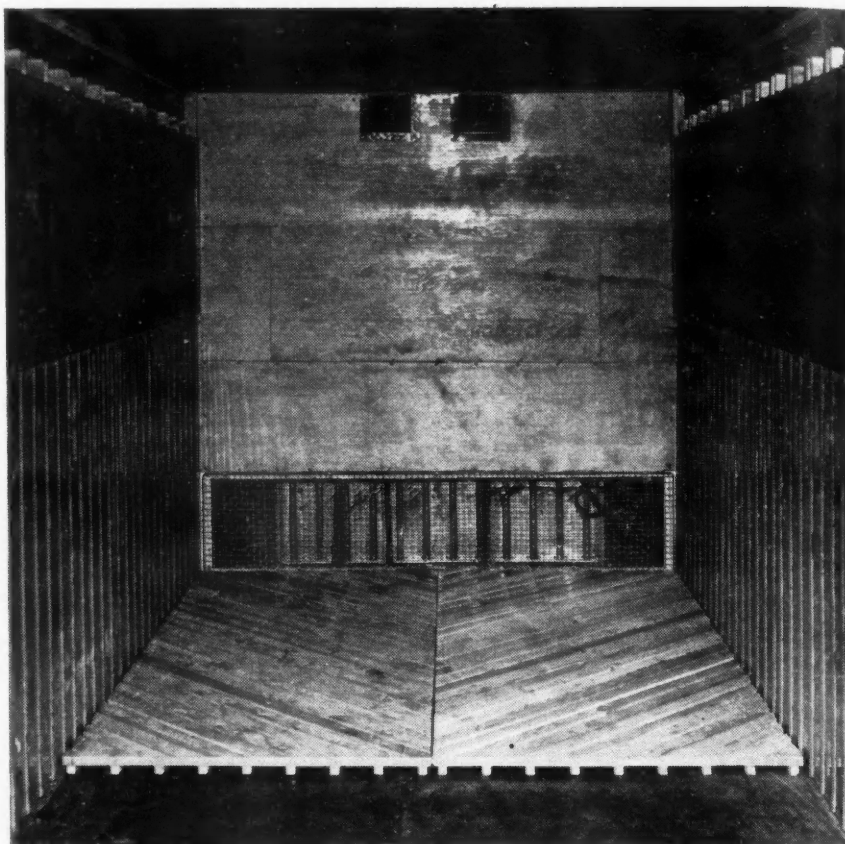
by **R. F. ALLYNE**

Pacific Intermountain Express,
Salt Lake City, Utah

PACIFIC INTERMOUNTAIN Express Co. is now providing refrigerated service between California and Chicago with advanced design equipment capable of holding temperatures as low as zero deg. fahr. and thus meeting the needs of even long-distant frozen food shippers.

Before describing some of our recent improvements in refrigeration equipment it might be well to discuss a few points about refrigerated truck transport not generally understood.

The most that the best refrigerated trucks can do is to maintain the loading temperature of the cargo. They cannot refrigerate (reduce the temperature of the cargo) appreciably. The amount of refrigeration required to refrigerate a cargo is many times that required to only maintain a pre-cooled temperature. Compare the size of the refrigerating mechanism



Cold air from evaporator and blowers at top front is forced back over load, returns under special floor racks. Air space at rear and on both sides is also a prerequisite of uniform refrigeration. See diagram below

Knowledge of

Reefer Limitations Points

in a chill room capable of quickly cooling, say, freshly killed animals with the size of a truck unit. Space and weight limitations restrict the size of the largest economically practical truck unit.

A good reefer, loaded with frozen foods pre-cooled to zero, deg. F. can deliver that cargo one thousand miles

away at or near zero. But that same equipment, loaded with frozen foods pre-cooled to only 20 deg., could not deliver it at or near zero. It would deliver the cargo close to 20 deg. Fresh meat pre-cooled to 35-40 deg. could easily be delivered at the same

temperature. But that same truck which did such a fine job with frozen foods pre-cooled to zero could not take fresh meat pre-cooled only to 70 deg. and deliver at 35 deg. It would, however, reduce the temperature of that warm meat in transit a few degrees.

There is such a general misunderstanding of the temperature performance characteristic that some shippers loading perishables at 70 deg. complain because the cargo is not down to 40-45 deg. at destination. Consider

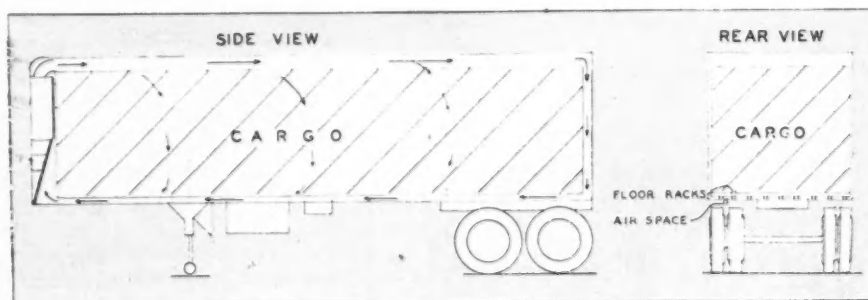
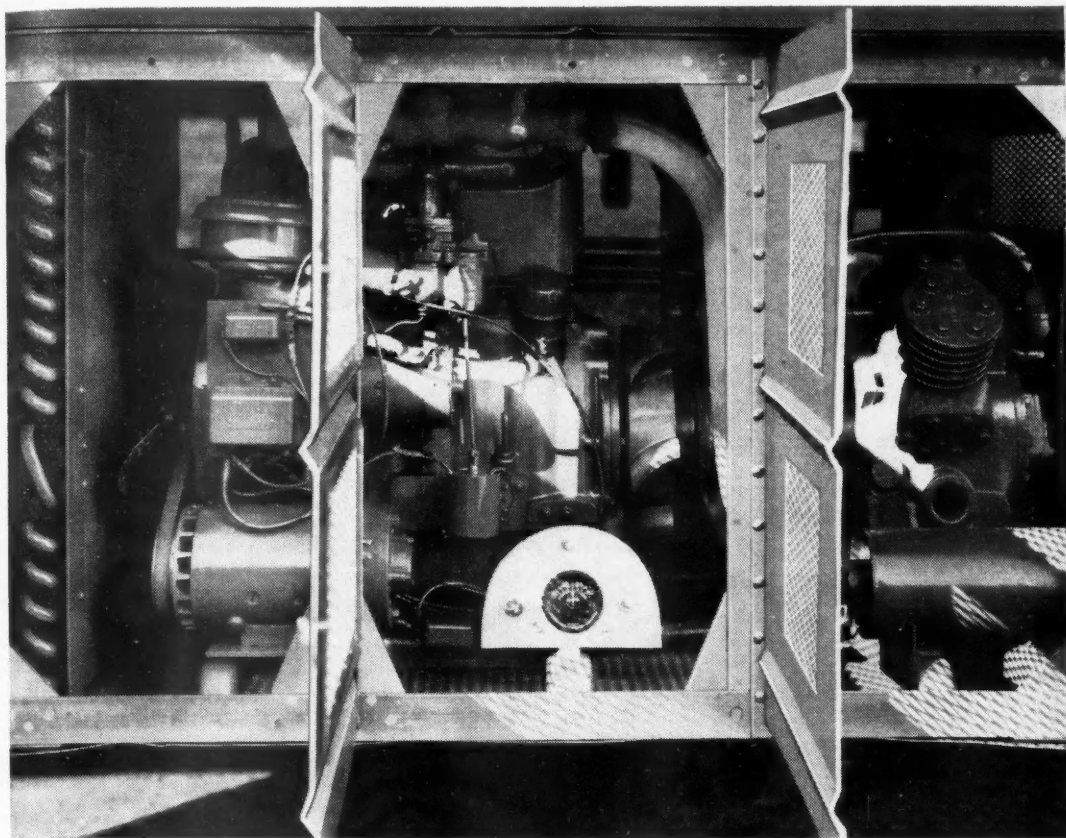


Diagram illustrates forced air circulation completely around the load



Close-up of condensing unit which features 16-hp. air-cooled engine, 3-hp. compressor and centrifugal clutch which permits constant operation of engine at either free idle or at 1750 r.p.m. operating speed



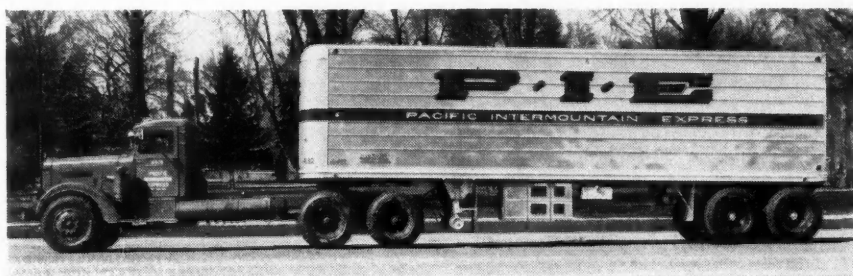
Way to Better Service

erable confusion will be eliminated when shippers recognize that even the best reefers are no substitute for a chill room, and that the cargo temperature at destination is dependent mainly on its loading temperature.

Some refrigerated equipment will not even maintain the pre-cooled temperature. It merely retards the temperature rise. In this case the proximity to spoilage is dependent on the time element. Such inferior refrigerated service is too common and

(TURN TO NEXT PAGE, PLEASE)

P.I.E. expert tells what may and what may not be expected from good truck refrigeration equipment, then gives some hot tips on latest cold control



Typical P.I.E. reefer is all aluminum job with condensing unit underneath

Reefer Limitations

(CONTINUED FROM PAGE 93)

actually serves as a trade barrier because operators with good equipment are reluctant to interline perishables at origin or destination due to divided responsibility with operators of inferior equipment.

Wanted: A Seal of Approval

CARRIERS should know the performance capabilities of their

equipment. This requires research, special knowledge, equipment, and facilities which most operators do not possess. Here is where a national organization could render a real service to the trucking industry as well as shippers of perishables. Required are (1) A code for good construction and air circulation under load conditions, (2) Establishment of minimum standards of performance, (3) Testing laboratory facilities available to all, (4) A grading to indicate the degree of performance capabilities,

and a stamp of approval to be publicized to perishable shippers through trade journals and national and local associations.

It would appear that now is the time for national organizations to make a concerted effort towards the optimum in refrigerated trucking. Until efforts are made to detect and expose the weak link in the chain, there will always be some who will be satisfied to just get by at the expense of impairing quality of cargo. Using the absence of claims as the only gauge for acceptable temperature protection is no substitute for a scientific approach to the problem.

Important Improvements

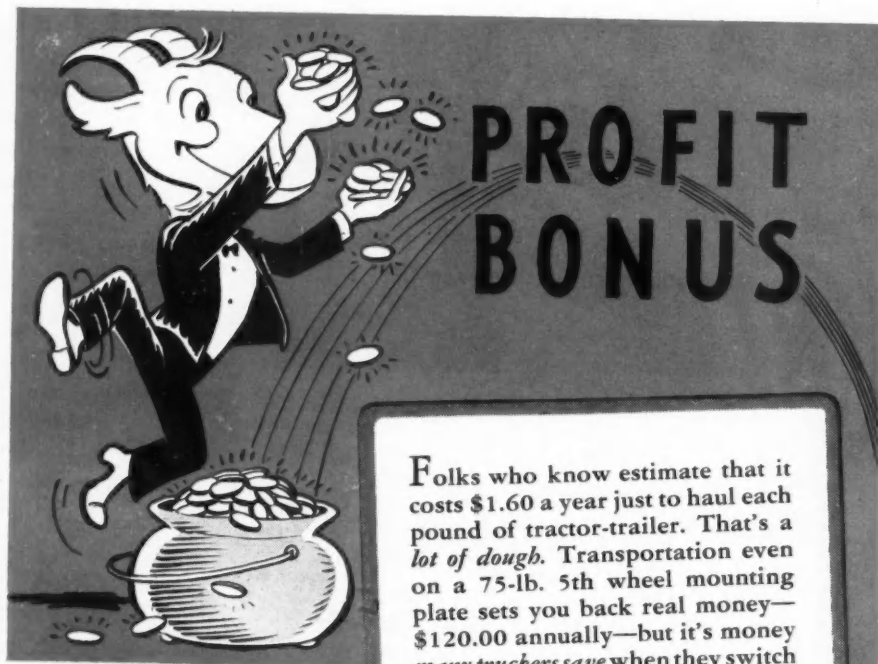
THE BASIC features of our own truck refrigeration equipment were described in a previous article in *COMMERCIAL CAR JOURNAL* (Jan., 1946, p. 52). But since that time several important improvements have been made in the mechanical refrigeration unit itself and particularly in the forced air circulation which completely surrounds the load.

Our newest reefers consist of aluminum trailers built by Brown Industries of Spokane, Washington. Into the top and all sides we pack 4 in. of high-efficiency insulation with a K factor of .24. The floors are at present undergoing still further modification but will contain at least an equivalent amount of insulation.

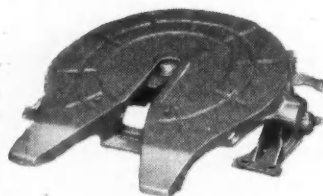
The mechanical condenser unit follows more or less conventional design except that it is oversized and features a centrifugal clutch which permits engine to operate at all times that refrigeration is required—either at 900 r.p.m. idle or at 1750 r.p.m. in the power cycle. The compressor operates only when the engine is at 1750 r.p.m. and the centrifugal clutch engages or disengages around 1200 r.p.m. Thermostatic control regulates the speed of the engine rather than the more usual stop-and-start cycle.

This operating characteristic offers several advantages. It eliminates the danger of having to automatically start the cold engine and the attendant wear caused by cold lubricants. It reduces strain on bearings because the engine is "reved" up before compressor load is imposed. There are fewer controls and a smaller battery can be used with

(TURN TO PAGE 118, PLEASE)



**DEALERS AND
DISTRIBUTORS
WHEREVER YOU ARE
... WHEREVER YOU GO**



"400 Series" Wheel for General Highway Hauling. Ask Your Safety 5th Wheel Salesman for Complete Information, or Write Direct for Literature.

Folks who know estimate that it costs \$1.60 a year just to haul each pound of tractor-trailer. That's a lot of dough. Transportation even on a 75-lb. 5th wheel mounting plate sets you back real money—\$120.00 annually—but it's money *many truckers save* when they switch to Safety 5th Wheels.

BALANCED INSTALLATION

These wheels need no mounting plates. Fixed bracket spacing matches a standard 34" tractor chassis. Safety 5th Wheels are strong; won't "dish"—put weight where it *counts most* . . . in the working and wearing parts of the husky wheel itself.

SAVE WITH SAFETY

Safety 5th Wheels save money in *so many ways* that it's easy to see why truckers everywhere are insisting on these better 5th wheels. *You'll like them, too.* Automotive Division, American Steel Foundries, 400 N. Michigan Ave., Chicago 11, Illinois.

A.S.F.

Safety 5th WHEEL

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or

unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.

c.o.e.—Cab-Over-Engine design.

(D)—Diesel-engine equipped.

(T)—Designed for tractor use only.

(C)—Converted Ford or Chevrolet Model.

(2) International Harvester—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Eaton Two-Speed Axle designated KS Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix.
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse.
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken.
Tw—Timken-Westinghouse.
TW—Timken-Wisconsin.
WQ—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
WW—Westinghouse or Wagner.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
Dp—Dual Primary.

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive.
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
3/4—Three Quarters Floating.
1/2—Semi-Floating.
T—Torque Tube.

GEAR RATIOS

(**) Only one ratio.

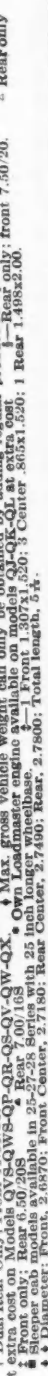
Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods.
T—Torque Arm.

GOVERNOR STANDARD

V—Yes.
N—No.

Line Number	MAKE MODEL	WHEEL- BASE		Gross Vehicle Weight	(See details) for Normal Service	TIRE SIZES		ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME				
		Minimum	Maximum			Standard	Authorized Front and Rear	Dual rear S-angle rear	No. of Cylinders	Stroke	Displacement	Torque lb. ft.	H.P. at R.P.M.	Main Bearings	Governor Standard		Make and Model	Forward Sp'ds	Make and Model	Gear and Type		Drive X Torque	Range in High	Make and Model	Linking Area	Drum Material	Hand Location	C-A Dimensions (Min. Std. W. B.)	Side Rail Dimensions	Type
1	Available	CS-200-SF	126	133	15000	7.00/20D	7.50/20	Wau 6BM	6-3/4x4	263.5	9.180	78-2800T	M N W G T 9	4 Tm 53440H	SF	H R	6.83-7.4	Tm 35502H	L4IH	334	583	TX	141H	103x3	L
2	CS-250-SF	126	133	18000	7.50/20D	8.25/20	Wau 6BZ	6-3/4x4	320.5	9.210	95-2500T	Fu 5A330	5 Tm 5441H	SF	H R	6.83-7.4	Tm 35502H	L4IH	334	583	TX	141H	103x3	L	
3	CS-250-SF	126	133	20000	8.00/20D	8.50/20	Wau 6BZ	6-3/4x4	320.5	9.210	95-2500T	Fu 5A330	5 Tm 5441H	SF	H R	6.83-7.4	Tm 35502H	L4IH	334	583	TX	141H	103x3	L	
4	CS-300-SF	126	133	22000	9.00/20D	9.50/20	Wau 6MZA	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
5	CS-350-SF	126	133	24000	9.00/20D	10.00/20	Wau 6MZA	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
6	CS-350-SF	126	133	24000	9.00/20D	10.00/20	Wau 6MZA	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
7	CS-350-SF	126	133	24000	9.00/20D	10.00/20	Wau 6MZA	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
8	CS-400-SF	126	133	36000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
9	CS-400-SF	126	133	36000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
10	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
11	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
12	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
13	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
14	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
15	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
16	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
17	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
18	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
19	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
20	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
21	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
22	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
23	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
24	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
25	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
26	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
27	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
28	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
29	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
30	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
31	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
32	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
33	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
34	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
35	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
36	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
37	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
38	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
39	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
40	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
41	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
42	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
43	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
44	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
45	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
46	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
47	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	583	TX	141H	123x3	L	
48	CS-400-SF	126	133	40000	11.00/20	11.00/24	Wau 6BZ	6-3/4x4	404.5	9.266	112-2500T	YFu 5F430	5 Tm 56410H	SF	H R	6.83-7.4	Tm 35500H	L4IH	334	58					



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 ‡ Diameter front 2.343, Center 2.375, Rear 2.406. ‡ Two speed rear axle with vacuum shift and power braking.
 † Weight of complete vehicle with 5 gal. of gas.



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Line Number	MAKE AND MODEL	Chassis List Price		WHEEL-BASE	TIRE SIZES		ENGINE DETAILS					TRANS-MISSION		REAR AXLE			FRONT AXLE		BRAKES			C-A Dimensions (Inch, Std. W. B.)	Type		
		Minimum Standard	Maximum Standard		Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Standard Front and Rear	Dual rear S-single rear	Model and Max. H.P. at R.P.M.	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Main Bearings Number, Diameter and Length	Governor Standard	Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	Make and Model	Make Location Type			Drum Area	Drum Material	Head Location
1	Reo	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
2	19A	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
3	19B	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
4	19C	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
5	21T	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
6	21B	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
7	21C	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
8	21D	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
9	22A	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
10	22B	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
11	22L	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
12	23T	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
13	23B	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
14	23C	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
15	23D	125	125	14000	4350/7.50/20	8.25/20	8.25/20	Own GM245	6-3 3/4x4 1/2	245.6	2.91	89-3100	7-3/16x10-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
16	25BL & 25B	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
17	25BL & 25B	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
18	25L	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
19	Sterling	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
20	HD97	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
21	HD105	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
22	HD115	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
23	(D)	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
24	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
25	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
26	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
27	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
28	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
29	HD145H	145	145	17400	4650/10.00/20	10.00/20	10.00/20	Own GM247	6-4 3/4x4 1/2	277.5	3.02	127-3700	7-3/16x13-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
30	HD175	167	167	18500	4950/12.00/22	12.00/22	12.00/22	Own GM247	6-5 3/4x4 1/2	302.5	3.12	150-1800	7-3/16x14-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
31	HD175	167	167	18500	4950/12.00/22	12.00/22	12.00/22	Own GM247	6-5 3/4x4 1/2	302.5	3.12	150-1800	7-3/16x14-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
32	(D)	167	167	18500	4950/12.00/22	12.00/22	12.00/22	Own GM247	6-5 3/4x4 1/2	302.5	3.12	150-1800	7-3/16x14-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
33	HD175H	167	167	18500	4950/12.00/22	12.00/22	12.00/22	Own GM247	6-5 3/4x4 1/2	302.5	3.12	150-1800	7-3/16x14-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
34	HD250H	175	175	20000	5150/14.00/24	14.00/24	14.00/24	Own GM247	6-6 3/4x4 1/2	327.5	3.24	150-1800	7-3/16x14-7	YWG T07	5-Tim 53000	SBF	H 6-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
35	Studebaker M6	113	113	4500	2120/6.50/16S	6.50/16S	6.50/16S	Own IM	6-3 3/4x4 1/2	170.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
36	M1A-20	125	125	10000	3650/7.50/17S	7.50/17S	7.50/17S	Own IM	6-3 3/4x4 1/2	170.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
37	M1A-20	125	125	10000	3650/7.50/17S	7.50/17S	7.50/17S	Own IM	6-3 3/4x4 1/2	170.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
38	M16(2-S)	128	128	15000	3955/7.50/20D	8.25/20	8.25/20	Own IM	6-3 3/4x4 1/2	226.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
39	(D)	128	128	15000	3955/7.50/20D	8.25/20	8.25/20	Own IM	6-3 3/4x4 1/2	226.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
40	Truettell(C) F18-6	140	140	18500	4285/7.50/20	10.00/20	10.00/20	Ford	6-3 3/4x4 1/2	239.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
41	(C)	140	140	18500	4285/7.50/20	10.00/20	10.00/20	Ford	6-3 3/4x4 1/2	239.6	2.54	89-4000	7-3/16x12-7	YWG T07	4-Tim 53000	SBF	H 5-60-9	16-Tim 30000	30000	30000	4-1VH	311	483 Co	TX	64 1/2x3 1/2
42	(C)	140	140	18500	4285/7.50/20	10.00/20	10.0																		

Complete Vehicle
6031 Auxiliary Transmission
2-Speed Axle Available
Lockheed Type Front and Trunk Dual Primary Rear Brakes
Auxiliary Transmission Own Oil
Auxiliary Transmission Own Oil
Front 12.00/24
Rear only: Front 8.20/20
Rear only: Front 11.00/24
Includes Cab
Rear only: Front 11.00/24
Turn to Page 104, Please
JULY, 1947

HOOD TRUCK TIRE

PERFORMANCE

TOPS PREWAR

*Nylon shock protectors and weftless rayon cord
provide an unbeatable combination for longer wear*

Why nylon shock protectors? Sharp impacts put more tires out of service than tread wear. To overcome this hazard, Hoods are built with two rubber coated nylon breaker strips laid in between the tread and the cord body.

Strong, yet elastic, these nylon "shock protectors" absorb impacts, make tires more bruise-resistant. Average tire mileage is increased. Danger of tread separation is reduced. More tires can be recapped.

Why weftless rayon cord? In a weftless construction there are no cross-woven cords to saw against each other. Instead, cords lay parallel and flat, completely surrounded by rubber. Hood is able to offer you this cooler-running construction through the use of electronic processing which sets the twist in the rayon cord—permits these cords to be built into the tire in a frictionless method.

Together, nylon shock protectors and weftless rayon cord form an unbeatable combination that will give you even better truck tire performance, longer mileage than before the war.

If it's HOOD, it's GOOD



HOOD RUBBER COMPANY, A DIVISION OF THE B. F. GOODRICH COMPANY—AKRON, OHIO AND LOS ANGELES, CALIF.

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

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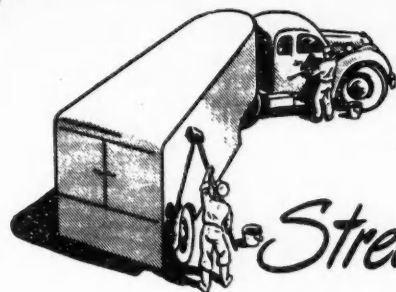
Line Number	MAKE AND MODEL	WHEEL-BASE		TIRE SIZES		ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES			FRAME						
		Minimum Standard	Maximum Standard	Standard Front and Rear	Dual rear S-spring rear	Model and Displacement	No. of Cylinders	Stroke and Bore	Comp. Ratio	Torque lb. ft.	H.P. at R.P.M.	Main Bearings and Diameter	Governor Standard	Model and Forward Spds	Model and Gear and Type	Model and Drive & Torque	Model and Range in High	Model and Make and Model	Location Type Oper. Area	Drum Material	Hand Location Type	C-A Dimension (Min. Std. W. B.)	Side Rail Dimensions	Type
1	Oshkosh... W-307	140	201	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
2	Oshkosh... W-307	150	205	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
3	Oshkosh... W-307	160	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
4	Oshkosh... W-307	170	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
5	Oshkosh... W-307	180	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
6	Oshkosh... W-307	190	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
7	Oshkosh... W-307	200	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
8	Oshkosh... W-307	210	204	10.00/20	11.00/20	Her WXL33	6-4	4.5x4.5	404.6	3310	118-2500	7-2 1/2x13 1/4	Y/Fu 5A43	5/Tim 55300	SF	H	H	6.0-8.0	W307	L41H	TX	82	8 1/2x3 1/2	TF
9	Peterbilt(D) 270DD	165	Opt	10.00/20	11.00/22	Cum HB600	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	Y/Spl 7741	12/U-200P	2F	R	R	6.0-8.0	W307	W41A	FD	80 1/2	10 1/2x3 1/2	TF
10	Starling... DD115	160	175	10.00/20	11.00/24	Wau GSXKR	6-4	4.5x4.5	517.5	506	125-2250	7-4 1/2x10 1/4	Y/Fu 5A62	10/Tim 1357W	2F	R	R	6.0-8.0	W307	W41A	TX	76	9 1/2x3 1/2	TF
11	Starling... DD145H	167	185	10.00/20	12.00/24	Cum HB600	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	Y/Fu 5A62	10/Tim 1357W	2F	R	R	6.0-8.0	W307	W41A	TX	77	9 1/2x3 1/2	TF
12	Walter (c.f.) FN	126	150	10.00/20	10.00/20S	Wau MZA	6-4	4.5x4.5	404.6	2900	125-2600	7-2 1/2x12 1/4	Y/Own FN	6/Own FNB	2	H	H	6.0-8.0	W307	O41A	FI	84	7 1/2x3 1/2	C
13	Walter (c.f.) FN	126	150	10.00/20	10.00/20S	Wau MZA	6-4	4.5x4.5	404.6	2900	125-2600	7-2 1/2x12 1/4	Y/Own FN	6/Own FNB	2	H	H	6.0-8.0	W307	O41A	FI	84	7 1/2x3 1/2	C
14	Walter (c.f.) FN	126	150	10.00/20	10.00/20S	Wau MZA	6-4	4.5x4.5	404.6	2900	125-2600	7-2 1/2x12 1/4	Y/Own FN	6/Own FNB	2	H	H	6.0-8.0	W307	O41A	FI	84	7 1/2x3 1/2	C
15	Walter (c.f.) FN	126	150	10.00/20	10.00/20S	Wau MZA	6-4	4.5x4.5	404.6	2900	125-2600	7-2 1/2x12 1/4	Y/Own FN	6/Own FNB	2	H	H	6.0-8.0	W307	O41A	FI	84	7 1/2x3 1/2	C
16	Walter (c.f.) FN	126	150	10.00/20	10.00/20S	Wau MZA	6-4	4.5x4.5	404.6	2900	125-2600	7-2 1/2x12 1/4	Y/Own FN	6/Own FNB	2	H	H	6.0-8.0	W307	O41A	FI	84	7 1/2x3 1/2	C
17	Willys... W-2204	160	181	10.00/20	11.00/24	Wau 145CK	6-5	4.5x6	779.5	750	185-2000	7-3 1/2x17 1/4	Y/Own FA	6/Own FCR	2	H	H	6.0-8.0	W307	O41A	FI	89	14 1/2x3 1/2	B
18	Willys... W-2204	160	181	10.00/20	11.00/24	Wau 145CK	6-5	4.5x6	779.5	750	185-2000	7-3 1/2x17 1/4	Y/Own FA	6/Own FCR	2	H	H	6.0-8.0	W307	O41A	FI	89	14 1/2x3 1/2	B
19	Federal... 663MA	180	225	10.00/20	10.00/22	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
20	Federal... 664MAB	180	225	10.00/20	10.00/22	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
21	Federal... 664MAB	180	225	10.00/20	10.00/22	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
22	F.W.D... M6X6D	243	276	10.00/24	11.00/24	Wau 145CK	6-5	4.5x6	779.5	750	185-2000	7-3 1/2x17 1/4	Y/Fu 5A62	10/Ws SD462	2F	L	L	6.0-8.0	W307	W61A	T6	183	10 1/2x3 1/2	D
23	F.W.D... M6X6D	243	276	10.00/24	11.00/24	Wau 145CK	6-5	4.5x6	779.5	750	185-2000	7-3 1/2x17 1/4	Y/Fu 5A62	10/Ws SD462	2F	L	L	6.0-8.0	W307	W61A	T6	183	10 1/2x3 1/2	D
24	International (2)	181	194	10.00/20	10.00/20	Own BLD260	6-3	4.5x4.5	251.6	3000	100-3200	7-2 1/2x15 1/4	N/Own F51	5/Own BFI450	SF	H	H	6.0-8.0	W307	W61A	FX	77	8 1/2x3 1/2	T
25	International (2)	181	194	10.00/20	10.00/20	Own BLD260	6-3	4.5x4.5	251.6	3000	100-3200	7-2 1/2x15 1/4	N/Own F51	5/Own BFI450	SF	H	H	6.0-8.0	W307	W61A	FX	77	8 1/2x3 1/2	T
26	International (2)	181	194	10.00/20	10.00/20	Own BLD260	6-3	4.5x4.5	251.6	3000	100-3200	7-2 1/2x15 1/4	N/Own F51	5/Own BFI450	SF	H	H	6.0-8.0	W307	W61A	FX	77	8 1/2x3 1/2	T
27	International (2)	181	194	10.00/20	10.00/20	Own BLD260	6-3	4.5x4.5	251.6	3000	100-3200	7-2 1/2x15 1/4	N/Own F51	5/Own BFI450	SF	H	H	6.0-8.0	W307	W61A	FX	77	8 1/2x3 1/2	T
28	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
29	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
30	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
31	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
32	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
33	Ken... (D) 623 AR	183	241	10.00/20	11.00/22	Cum HB6	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	YBL 7841	4/Tim SW3012PA	WF	R	R	6.0-8.0	W307	W61A	TD	102	9 1/2x3 1/2	C
34	Marmon-Herr... CM-6	180	225	10.00/20	10.00/20	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
35	Marmon-Herr... CM-6	180	225	10.00/20	10.00/20	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
36	Marmon-Herr... CM-6	180	225	10.00/20	10.00/20	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
37	Marmon-Herr... CM-6	180	225	10.00/20	10.00/20	Con R6602	6-4	4.5x5	602.6	1442	200-2600	7-3 1/2x14 1/4	Y/Fu 5A65	15/T SW3012P	WF	R	R	6.0-8.0	W307	W61A	TD	108	10 1/2x3 1/2	T
38	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
39	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
40	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
41	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
42	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
43	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
44	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
45	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
46	Oshkosh... W703	140	201	10.00/20	11.00/20	Her RXLD	6-4	4.5x4.5	558.5	4005	141-2200	7-3 1/2x13 1/4	Y/Fu 5A650	12/Tim SD454W	2F	H	H	6.0-8.0	W307	W61A	TX	100	10 1/2x3 1/2	B
47	Peterbilt(D) 344DT	189	Opt	10.00/20	11.00/22	Cum HB600	6-4	4.5x6	672.17	500	150-1800	7-4 1/2x10 1/4	Y/Spl 7741	12/Tim SW456W	WF	A	A	6.0-8.0	W307	W6				

62 (D)... HCS150H... (Turn to Page 107, Please) JULY, 1947

(Continued from Page 104)

Line Number	MAKE AND MODEL	WHEEL-BASE		TIRE SIZES		ENGINE DETAILS					TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME										
		Minimum Standard	Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Standard Front and Rear	Maximum Authorized Tire Size (Duals unless noted)	No. of Cylinders, Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Number, Diameter, and Main Bearings	Governor Standard		Make and Model	Forward Sp'ds	Gear and Type		Gear Range in High	Make and Model	SERVICE				C-A Dimensions (Min. Std. W. B.)	Side Rail Dimensions	Type		
																		Location	Operat'n			Linking	Drum Area	Drum Material	Hand Location				Type	
1	Sterling Com'd (D)... HCS265H	182	193	60000	18100	11.00/20	12.00/24	6-4 1/2 x 6	672/17	500/150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	12 Own 265W	CD	R 9.21-13.16	W 961A	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	91 x 33 3/8 x 4 1/2	A	JX
2	(D)... HCS267H	182	193	70000	21050	12.00/24	13.00/24	6-4 1/2 x 6	672/17	500/150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	12 Own 330W	CD	R 9.21-13.16	W 961A	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	91 x 33 3/8 x 4 1/2	AL	JX
3	(D)... HCS300H	174	187	80000	23450	12.00/24	14.00/24	6-4 1/2 x 6	672/17	500/150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	12 Own 330W	CD	R 9.21-13.16	W 961A	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	502 S36c	91 x 33 3/8 x 4 1/2	AL	JX
4	Truckstell (D)... F2X26 2F	156	237	26000	5900	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	4 Ford	SE	** - 6.67	Ford	SE	** - 6.67	** - 6.67	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
5	(D)... F2X27 2F	156	237	27000	6450	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	8 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
6	(D)... F2X34 2F	156	237	34000	8235	7.50/20	10.00/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	12 Cla R1300	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
7	(D)... F2X34 4R	135	224	34000	8235	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	8 Ford	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
8	(D)... F2X34 4R	144	210	26000	4300	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
9	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
10	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
11	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
12	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
13	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
14	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
15	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
16	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
17	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
18	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX
19	(D)... F2X34 4R	144	210	27000	7000	7.50/20	8.25/20	8-3 1/2 x 3 1/2	239/6	4180/100-3800	2 1/2 x 4 1/2	N Ford	16 Eat 1350	SE	5.63-8.11	Ford	SE	5.63-8.11	5.63-8.11	SE	SE	SE	SE	SE	SE	SE	SE	71 x 23 1/2 x 4 1/2	CT	TX

▲ Includes cab. ● Rear only: Front 11.00/24. ▲ Rear only: Front 12.00/24. † Auxiliary transmission, Spicer 8031.



Streak-free
car and truck washing
in less time ... with less effort

You can get streak-free surfaces in less time and with decidedly less effort when you wash your buses and trucks with that scientifically designed, quick-acting material.

OAKITE COMPOSITION No. 70

Because of its unusually effective detergent properties Oakite Composition No. 70 thoroughly removes all dirt, grease and grime . . . restores original bright-looking appearance to painted surfaces by removing color-dulling traffic film. Oakite Composition No. 70 is easy to use . . . easy to rinse away. This widely-used material may be applied with complete safety to such surfaces as paint, lacquer and enamel . . . will not affect decals or top varnish coats.

FREE BOOKLET: You can't afford to be without the 36-page Oakite guide to money-saving automotive cleaning and descaling procedures. Write for your free copy **TO-DAY!** Or ask the Oakite Representative near by for one. No obligation.



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Technical Representatives in Principal Cities of U. S. & Canada

OAKITE
Specialized Industrial Cleaning
MATERIALS • METHODS • SERVICE



CCJ NEWSCAST

'47 ASI SHOW OPEN TO QUALIFIED FLEETMEN

The 1947 Automotive Service Industries Show will be open to qualified fleetmen on the last three days, Dec. 11, 12 and 13. It will be held on Chicago's Navy Pier and all indications point to the fact that it will be even larger and more informative than last year's record show at Atlantic City.

Fleet operators operating 25 vehicles or more and operating their own maintenance departments, and executives of national accounts are eligible to attend. They must have an invitation from an exhibiting manufacturer. The invitation gives them the privilege of applying for credentials.

FULL PROGRAM FOR SAE GROUP

Principal speakers and the subjects which they will discuss at the National West Coast Transportation and Maintenance Engineering Meeting, Society of Automotive Engineers, at the Biltmore Hotel, Los Angeles, Aug. 21-22, include the following:

Julius Gaussoin, Air Brake Operation Troubles; W. M. Sopher, Lubrication; Col. Harry O. Mathews, Chrome Plating; Fred K. Landecker, Shot Peening; Col. Fred C. Horner, Fleet Operation; Col. E. O. Sawyer, Regulations; Dr. V. F. Larsen, Driver Selection and Training; J. Nevin Bauman, Truck Selection, and V. M. Drew, Trailer Selection.

FACTORS AFFECT INSURANCE

Eight basic factors directly affect motor carrier insurance rates, according to William H. Rodda, secretary of the Transportation Insurance Rating Bureau, Chicago. These factors are:

1. Driver selection, training and control. Experience shows that drivers over 30 are the best risks.
2. Vehicle maintenance practices.
3. Efficient check-in and check-out system.
4. Fire hazards in terminals.
5. Fire hazards in trucks on the road.
6. Value of merchandise carrier. It often pays to split high value cargoes, and installation of automatic alarms and pinlocks pays off.
7. Territory of operation. Runs into New York City and Chicago require higher rates while runs which do not enter cities over 50,000 population enjoy special low rates.
8. Hired-unit operation. A substantial increase in insurance rates is now contemplated where a large portion of the business is conducted with leased units.

DATES & DOINGS

JULY 28-AUG. 1—Fleet Supervisor Training Course, University of So. California, Los Angeles, Calif.

AUG. 11-15—Fleet Supervisor Training Course, University of Michigan, Ann Arbor, Mich.

AUG. 21-23—West Coast Transportation & Maintenance Meeting, Society of Automotive Engineers, Biltmore, Los Angeles, Calif.

AUG. 25-29—Fleet Supervisor Training Course, University of Richmond, Richmond, Va.

SEPT. 8-12—Fleet Supervisor Training Course, The Pennsylvania State College, State College, Pa.

DEC. 8-13—Automotive Service Industries Show, Navy Pier, Chicago, Ill.

JAN. 12-16, 1948—Annual Meeting, Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.

COALE RETIRES, COOGAN UPPED

H. M. Coale, Autocar vice-president of sales, has retired, effective July 1, and will be succeeded by Edward F. Coogan, previously vice-president in charge of branch sales. Mr. Coale is widely known in the automotive industry.

Mr. Coogan joined the Autocar organization in 1924 as manager of the New Haven branch. In 1928 he was promoted to the district managership in Boston where he had charge of all the New England branches. In 1932 he became district manager at Philadelphia. He was brought to the Autocar headquarters in Ardmore in 1936 and placed in charge of all branch sales. He became a vice-president in 1942.

STATE LEGISLATIVE ROUND-UP

Since last month's notations on State legislative activities (CCJ, June, p. 94) the following bills have been enacted:

Increased gasoline taxes in Colorado (2¢), Connecticut (1¢), Maine (2¢) Maryland (1¢) Nevada (1½¢) Rhode Island (1¢), and Vermont (½¢). The temporary gasoline tax in New York was made permanent and "emergency" taxes were extended in Florida, Idaho, Ohio, Pennsylvania and West Virginia.

Connecticut has increased its vehicle length to 45 ft. and its gross weights to conform to adjoining states. Nebraska and Oklahoma have revised size and weight limitations to partial conformity with the ASSHO code.

Florida passed an anti-diversion amendment.

Oregon now requires adequate fenders or splash guards on all trucks except a chassis not equipped for carrying a load.

Pennsylvania has extended the length of single vehicles from 33 to 35 ft., and removed the engine number as an identifying feature of trucks.

TRUCK DELIVERIES HIGH

New truck registrations continue at or near the record breaking peak established in March when a total of 79,344 units were delivered to owners. Incomplete returns for April and May indicate that well over 70,000 new units will be registered in each of these months, according to R. L. Polk & Co. figures. New registrations for the first four months of 1947 so far have totaled 265,999 units. For complete details by make and by state see page 82.

(TURN TO PAGE 110, PLEASE)

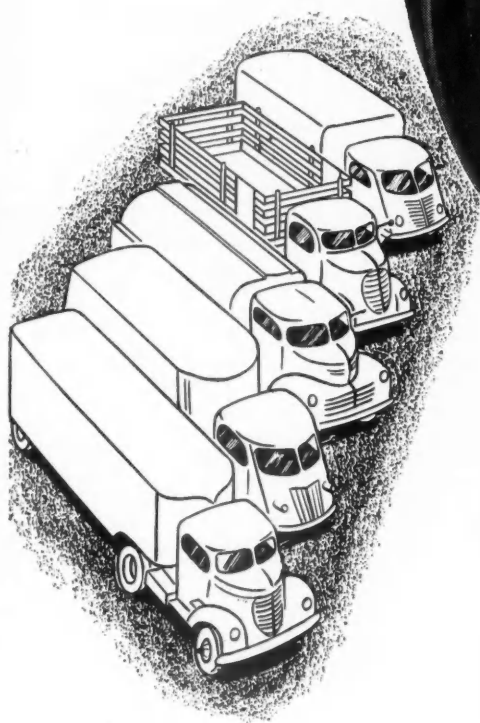
VITAL STATISTICS

Class 1 Motor Carriers of Property, 1939-1944

(Based on Interstate Commerce Commission Statistics for carriers in interstate commerce having annual gross operating revenues of \$100,000 or more.)

	1939	1940	1941	1942	1943	1944
Number of Class 1 Carriers	1139	1202	1301	1443	1578	1824
Average Power Units per Carrier	30.7	33.7	34.1	33.4	34.2	32.1
Average Employee per Power Unit	3.1	3.2	3.5	3.1	3.2	3.1
Annual Mileage per Truck	45,134	45,979	48,628	44,300	43,925	43,222
Average Haul in Miles	219	236	223	202	192	180
Average m.p.g. of fuel	5.1	5.4	5.2	4.8	4.8	4.3
Average m.p.g. of Oil	82.8	97.3	102.5	96.4	82.9	81.3
Average Number of Tractors per 100 Straight Trucks						
Inter-city service	103	109	120	139	143	164
Local service	25	28	30	34	41	42
Average Number of Semi-Trailers per 100 Tractors						
Inter-city service	122	123	119	121	123	124
Local service	206	216	188	165	175	179
Average Tons Handled per Vehicle in Inter-city Service	1783	1744	1884	1934	2230	2330
Average Ton-Miles per Power Unit	390,143	399,066	391,116	367,096	393,261	391,099
Average Revenue per Power Unit	\$11,404	\$11,599	\$13,879	\$13,496	\$15,099	\$15,736
Average Revenue per Carrier	\$357,568	\$402,480	\$445,543	\$450,868	\$515,682	\$504,610
Average Revenue per Inter-city Ton	\$6.50	\$8.90	\$7.58	\$7.12	\$6.64	\$6.85
Freight Revenue per Inter-city Vehicle-Mile	24.9¢	27.0¢	25.2¢	29.0¢	32.2¢	33.5¢
Freight Revenue per Inter-city Ton-Mile	3.9¢	4.0¢	3.6¢	3.6¢	3.6¢	4.1¢
Average Revenue per \$100 Investment (Capital Turnover)	\$234	\$238	\$245	\$265	\$273	\$261
Average Investment per Carrier	\$152,908	\$169,002	\$181,582	\$170,352	\$186,597	\$193,909
Average Taxes per Power Unit	\$767	\$919	\$999	\$1,432	\$1,403	\$1,339

MIDLAND



DIRECT APPLIED POWER for POSITIVE BRAKING

Midland's HY-POWER Vacuum Brake combines in a single completely enclosed unit these three time-tested parts: Vacuum diaphragm chamber, hydraulic vacuum valve and hydraulic slave cylinder. All moving parts are completely enclosed — protected against all weather and atmospheric conditions. No mud, water, dust or dirt can enter to rust, corrode or unseat internal valves. Scientifically designed and ruggedly constructed for efficient, trustworthy service under all conditions. Ask your Midland distributor about the superiority of HY-POWER, or write to us for complete information.

**HY-POWER UNITS
CAN BE APPLIED TO
PRACTICALLY ALL
MAKES AND MODELS**

THE MIDLAND STEEL PRODUCTS CO.
6660 Mt. Elliott Avenue • Detroit 11, Mich.
Export Dept: 38 Pearl St., New York, N. Y.

MIDLAND POWER BRAKES

HOME TOWN NOTES

Atlanta, Ga.: A new factory branch and warehouse for McQuay-Norris Mfg. Co. offering complete machine shop service and company products, at 690 Murphy Ave., S. W. It is located in Unit 7, Bldg. B.

Charlotte, N. C.: A new factory service branch for Black & Decker Mfg. Co. at 117 E. Ninth St.

Jacksonville, Fla.: A new factory sales and service branch for Fruehauf Trailer Co. at 1422 King's Road.

ICC SAFETY RULES PROTESTED

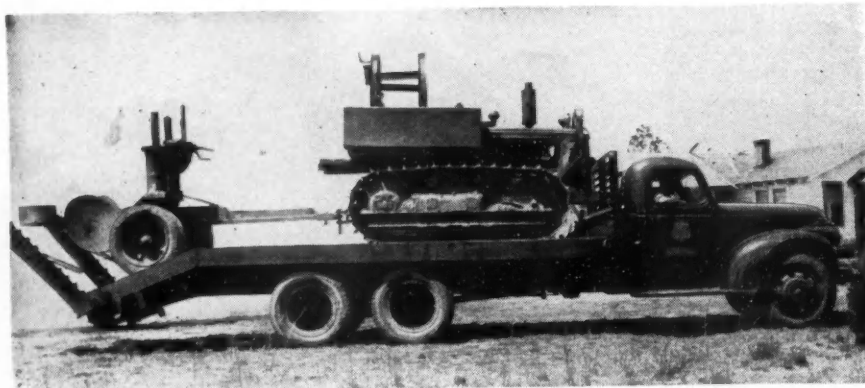
The first of a series of informal conferences concerning the proposed revisions in the ICC Motor Carrier Safety Regulations was held in the office of the commission early last month. Considerable objection was raised against the proposed extension of all rules to apply to municipalities and zones adjacent thereto.

Other complaints concerned the proposed amendment for annual driver physical examination, retention of the requirement for front wheel brakes, rules in Part 3 concerning automobile transporting and the prescribing of additional forms in Part 4.

Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

	5,000 & Less	5,001-10,000	10,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	25,387	11,049	21,427	11,791	3,259	2,484	77,300
February	25,893	13,052	21,564	15,915	2,316	2,702	83,253
March	27,220	16,917	22,404	17,093	3,062	3,381	92,006
April	24,387	15,953	18,910	14,846	3,582	3,439	83,308
May	23,532	14,091	17,474	13,028	2,577	3,067	75,696
5 Months	126,419	71,062	101,779	72,673	14,796	15,073	411,563

* Automobile Manufacturers Association.



FAB DUAL DRIVE ON FIRE FIGHTER TRUCK

Shown above is the type of equipment successfully used by the State of Florida Forest Service in controlling fires. Complete units like this are stationed at strategic points and when a fire is reported, the truck rolls down the highways or county roads at 35 M.P.H., and upon approaching the burning area the driver engages the FABCO DUAL DRIVE and goes across the countryside, over the soft sandy soil, right through the brush, to get the tractor and plow as close to the fire as possible in the fastest possible time. Then the tractor and plow roll off and the task of plowing a firebreak and isolating the blaze begins. It is another of those applications which requires speed, coupled with traction and power when needed. That means FABCO DUAL DRIVES.

20 Years in this Business



F. A. B. MANUFACTURING CO.

1249 SIXTY-SEVENTH STREET • OAKLAND 8, CALIFORNIA

Dual Drives • 6 and 10 Wheel Units • Logging and Highway Trailers • Frame Extensions

1947 Truck Trailer Production

	April, 1	4 Months
Vans:		
Insulated and Refrigerated	193	797
All other closed top	1,763	10,050
Open top	150	941
Total Vans	2,106	11,788
Platforms:		
With cattle and stake racks	291	1,511
With grain bodies	77	379
All other	985	4,281
Total Platforms	1,353	6,171
Tanks	248	1,024
Pole and Logging:		
Single Axle	367	2,225
Tandem Axle	297	697
Total	664	2,922
Low-bed heavy haulers	234	843
Off-highway	81	283
Dump trailers	71	394
All other trailers	216	558
Total Trailers	4,973	23,983
Chassis for trailers	304	1,329
Total Trailers and Chassis	5,340	25,312

* Prepared by Bureau of The Census, Industry Division.

INDUSTRIAL NOTES

The nation's newest automotive assembly plant was put into operation at Flint, Mich., last month by Chevrolet. An important innovation is the utilization of overhead conveyors on the final assembly line permitting right-side-up chassis assembly and bench-level height for virtually all operations.

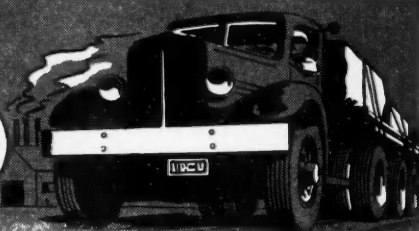
A \$20 million expansion program has been announced by Ethyl Corp. Largest appropriation will be for additional manufacturing capacity at the company's Baton Rouge, La., plant. New terminal storage plants on the east and west coast and in the mid-continent area are also underway.

Pittsburgh Plate Glass Co. has acquired the business of the Forbes Varnish Co., Cleveland, and will continue the operation as the Forbest Finishes Division.

Haskelite Mfg. Corp., Grand Rapids, Mich., has obtained a modern 230,000-sq. ft. plant from the War Assets Administration at a reported cost of \$1,200,000.

Bowers Battery and Spark Plug Co., Reading, Pa., has established two new manufacturing facilities, one at Los Angeles, the other at Houston. This brings the company's total number of plants to 12. The company has also acquired substantial interest in Bowers, LTH, S.A., Monterrey, Mexico, from which customers in Central and South America will be served.

STANDARD ENGINEERS NOTEBOOK



Inhibitor prevents foaming of gear lubricant

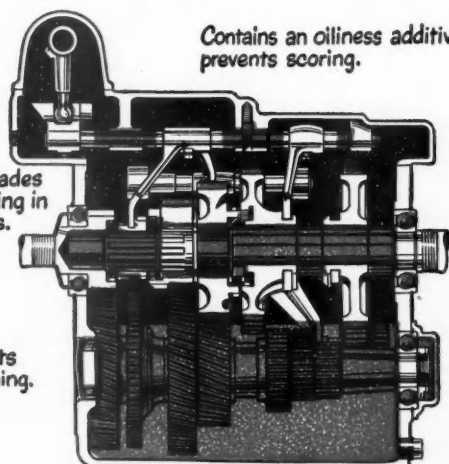
The foaming and expansion of lubricant in transmission and conventional differentials has been eliminated for many operators by the use of RPM Gear Lubricant (Compounded). It contains a highly effective foam inhibitor which prevents retention of air in the lubricant.

Other compounds in RPM Gear Lubricant help it resist high operating temperatures and pressures, dissipate heat rapidly and keep a tough lubricating film on gear teeth at all times.

RPM Gear Lubricant (Compounded) will not form deposits in gear cases and is non-corrosive.

It comes in four grades: SAE 80, 90, 140, 250 and is recommended for all automotive transmissions and all differentials (except hypoids) where compounded gear lubricant is specified. (RPM Multi-Service Gear Lubricant should be used in hypoid differentials.)

RPM Gear Lubricant (Compounded) is recommended for most enclosed gears except hypoids.

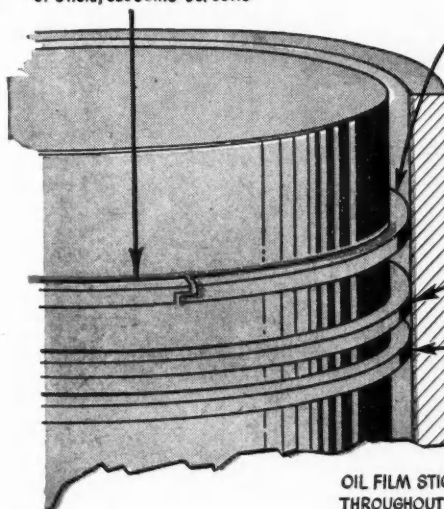


This drawing prepared with cooperation of Michigan Power Shovel Co.

For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Colo.; Standard Oil Company of Texas, El Paso, Texas.

DETERGENT KEEPS RING GROOVES FREE OF STICKY, CLOGGING DEPOSITS

RPM HEAVY DUTY PROVIDES SEAL THAT STOPS BLOWBY OF COMBUSTION GASES



OIL FILM STICKS ON PISTON AND CYLINDER THROUGHOUT ENTIRE TEMPERATURE RANGE

Heavy-duty motor oil reduces cylinder wear

Many operators have eliminated stuck rings, blow-by and excessive cylinder wear by using RPM Heavy Duty Motor Oil.

This special heavy duty oil contains patented additives which remove sticky gum, carbon and lacquer from rings and ring grooves, keeping rings free so they can expand fully. With rings expanded, the tough lubricant film of RPM Heavy Duty Motor Oil forms a seal between rings and cylinder which prevents the force of combustion from driving gases and fuels down the walls.

RPM Heavy Duty Motor Oil sticks to metal at all operating temperatures. This assures unsurpassed lubrication at all times on surfaces of cylinders, pistons and rings, reducing wear to a minimum.

RPM Heavy Duty Motor Oil will resist sludge formation even in coldest operations, will not foam or corrode bearing metals.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT



INTRODUCING...

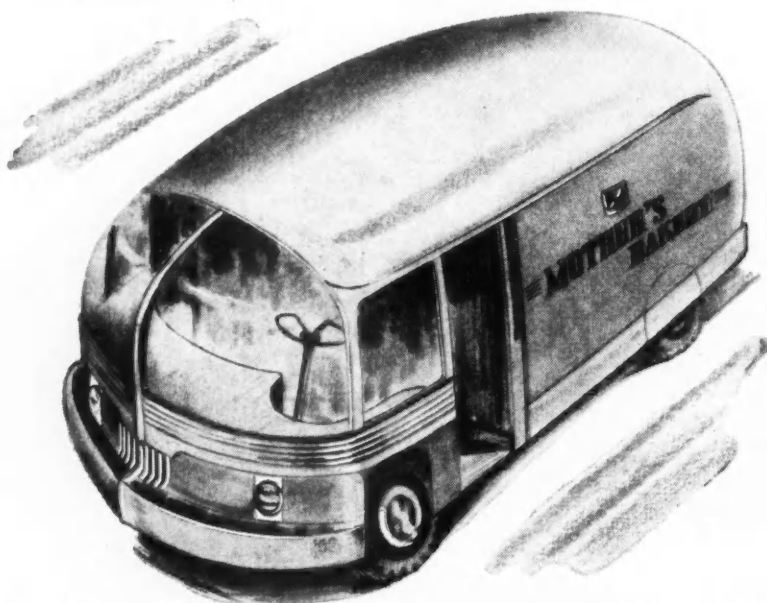
... CHARLES L. McQUEN, vice-president in charge of engineering staff, General Motors Corp., who succeeds CHARLES F. KETTERING, retired as general manager of the Research Laboratories Div.

... the following newly-appointed International Harvester branch personnel: W. G. SCHENDEL as branch manager, Buffalo;

G. D. PARTRIDGE as motor truck branch manager, Baltimore; B. M. KAISER as southwest district manager and R. G. GREER as asst. eastern district manager, truck division.

... FRED M. HUNT who has joined Trailmobile Co. in executive capacity to assist in expansion program.

GET *Advanced Styling* FOR YOUR FLEET...



By Using HART Standard Body Parts

Body Posts • Roof Rails
Rub Rails • Cross Sills
Lintels • Roof Panels
Cab Roofs • Ball Corners
Fenders • Wheel Housings
Roof Reinforcements

Your body builder can furnish a more advanced body design to your specifications by using Hart standard body sections and panels, and the Hart service of supplying special designs and parts to order. The job is quicker, easier, and done at less cost through Hart specialization.

WRITE FOR FULL INFORMATION TO DEPT. "C"

WEST COAST DISTRIBUTOR
Ideal Hardware and Supply Company
3050 Leonis Blvd., Los Angeles, Calif.

HART PRESSED STEEL CORPORATION

ELKHART, INDIANA

SERVING FLEET OWNERS AND THEIR BODY BUILDERS WITH NEW DESIGNS

... MILTON J. KELLY as manager of the eastern division of automotive replacement sales of Thermoid Co.



... R. W. HENDERSON as manager of newly-created north central sales division of the Sherwin-Williams Co.

... HOWARD O. LUND as sales manager of Willys-Overland Motors succeeding George H. Bell, resigned.



... CORWIN T. GEIER, who has been named general manager of the Bowes "Seal Fast" Corp. He will coordinate the activities of the Indianapolis plant with those in Riverside, Cal., Toronto, Ontario, and London, England

... J. L. DUNLEAVEY as commercial merchandising manager for Fisk Tires division, United States Rubber Co., and W. M. DAVIS as manager of battery and accessory sales

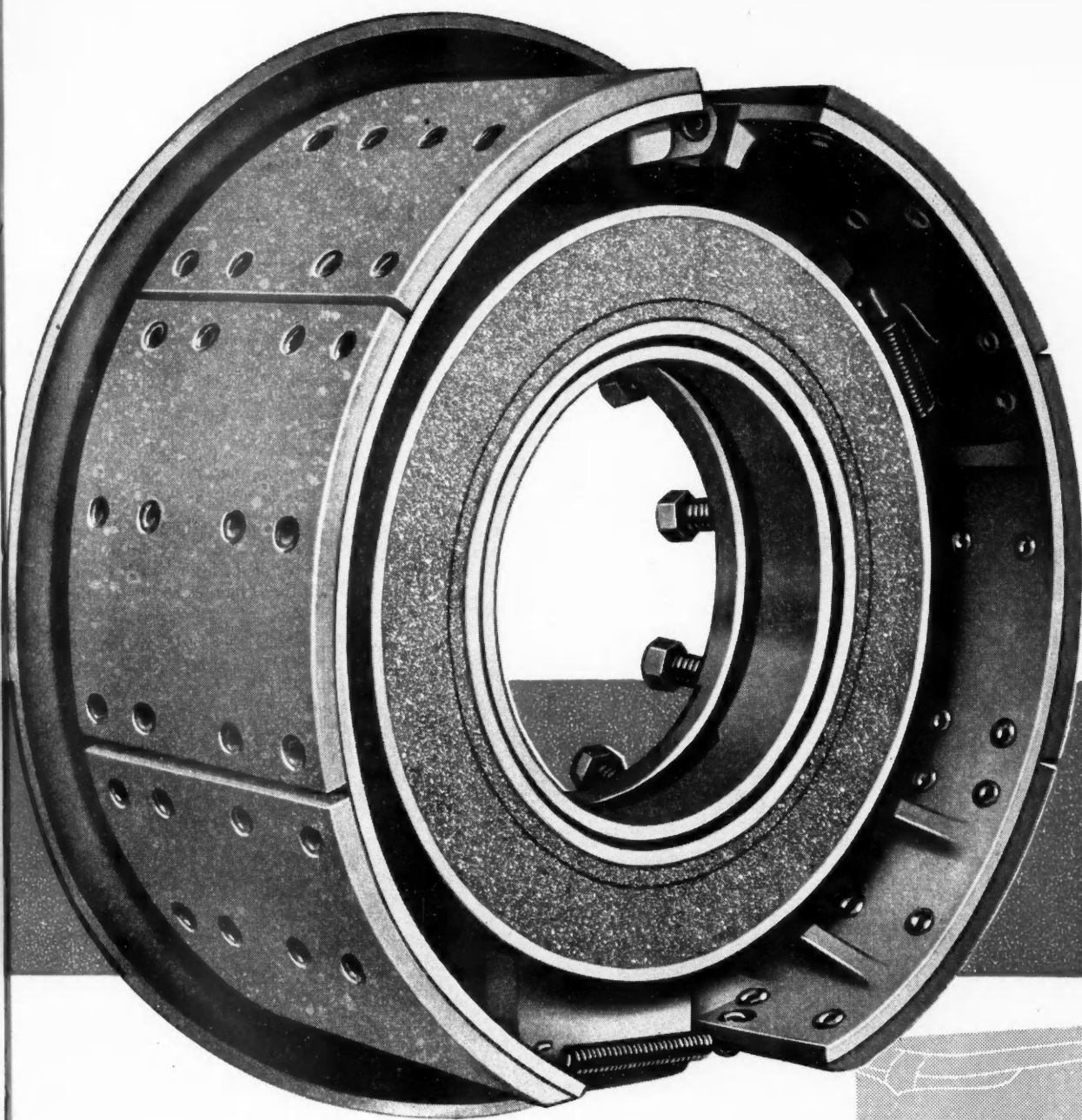


... GENE P. ROBERTS, as sales manager of replacement parts division, The Wetherhead Co. He will supervise industrial, aviation and automotive replacement sales

... JAY E. MILLER as advertising and sales promotion manager of Associated Tire and Accessory Lines div., B. F. Goodrich Co.

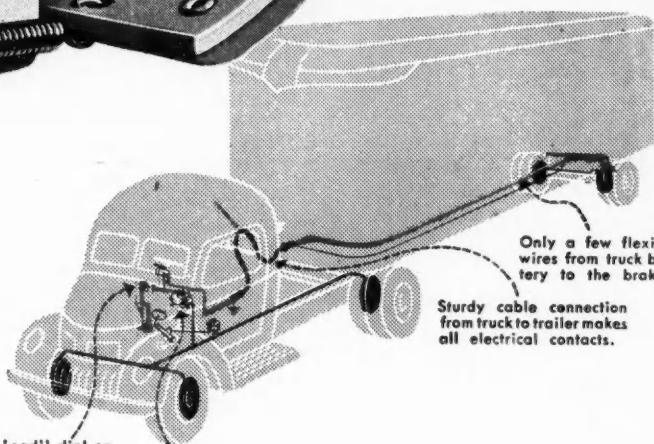


(TURN TO PAGE 116, PLEASE)



* REVOLUTIONARY ADVANCEMENT

More rugged construction, rigid shoes, longer lining life, smoother control and dependable performance under severe conditions.



"Vari-Load" dial on dash for pre-setting correct braking power.

Controller operates trailer's electric brakes in unison with truck's hydraulic or air brakes.

Only a few flexible wires from truck battery to the brakes.

Sturdy cable connection from truck to trailer makes all electrical contacts.

WARNER

ELECTRIC BRAKES

No other brakes equal the new Warner Electric Brakes for simplicity of design and construction. Full clearance under tractor and trailer . . . nothing to get knocked off, leak, chatter or freeze. No exposed braking equipment . . . no rods to rattle . . . no tubes to split . . . no troublesome boosters and hose connections. One rugged all-purpose Electrical Cable Connection provides contacts for brakes, running lights, parking lights, stop and turn signals — ALL electrical contacts. As easy to plug in as a radio.

SINCE 1927

Introducing . . .

(CONTINUED FROM PAGE 112)

...JOHN A. WORTHINGTON as general sales manager and T. LATIMER FORD as replacement sales manager of the Piston Ring Division, Koppers Co., Inc.

...C. S. VANDERBLUE as executive vice-president in charge of operations of Arrow Safety Device Co.

...J. J. O'NEILL as assistant manager, fleet sales sections, truck and fleet sales dept., Ford Motor Co.

...ROSS CHASTAIN as general sales manager, Barrett Equipment Co.

...LAUREN LEWIS as general manager of the Associated Motor Carriers, Inc., of South Dakota. He was formerly asst. manager of the Regular Common Carrier Conference of ATA.

...E. B. SPOONAMORE as advertising manager of Seiberling Rubber Co.

...MARTIN L. ORNER as vice-president of A. E. Friedgen, Inc., transportation consultant engineers, 11 West 42nd St., New York, N. Y.

...D. V. GEARWAR, former general superintendent of maintenance, Associated Transport, Inc., now vice-president Brown Equipment & Mfg. Co., Charlotte, N. C.

...W. E. KIMBROUGH as manager truck section, truck and fleet sales dept., Ford Motor Co.

...J. B. ROSENQUEST as vice-president of Autocar Sales & Service Co. in charge of New York City district and BURT F. DUNHAM in a similar capacity at Baltimore.

...H. J. RAINEY, who has been appointed vice-president of Kellogg Division of American Brake Shoe Co.

...W. F. BALZERICK as merchandising manager of the Truckstell Co., Cleveland.

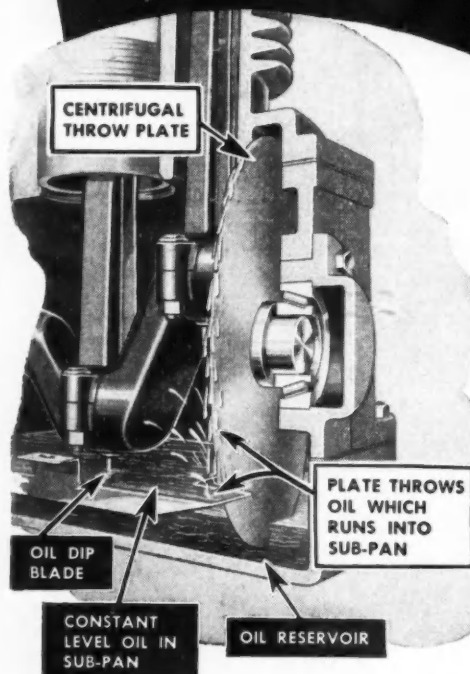
...ROBERT L. MILLER, who has been appointed district sales manager for all The Heil Co. products in the central states of Iowa, Missouri, Nebraska, Kansas and Colorado.

...ROBERT W. HADLEY, who has been appointed president, and ... HAROLD F. SMITH, treasurer, of the American Coach & Body Co., Cleveland, Ohio.

...JOHN A. SLOAN, formerly district manager of the Des Moines, Iowa, branch of the Mack-International Motor Truck Corp., will serve in the same capacity at the Chicago branch.

...A. L. MONCK, formerly of the St. Louis branch of Mack-International Motor Truck Corp., recently named district manager in charge of the company's Des Moines branch.

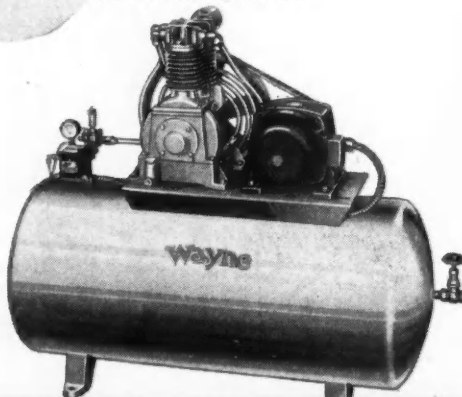
A Wayne Feature THAT MEANS LONGER LIFE



CONSTANT LEVEL OILING SYSTEM

HERE IS one of the notable mechanical features which mean higher efficiency for more years of service in Wayne Air Compressors. This unique oiling system prevents over-oiling as well as under-oiling. It replaces the troublesome oil pump and assures uniform oiling as long as there is oil in the reservoir.

WRITE FOR ILLUSTRATED CATALOG
THE WAYNE PUMP COMPANY
FORT WAYNE 4, INDIANA



for your protection

AIR COMPRESSORS

GASOLINE PUMPS - CAR WASHERS - AIR SCALES - HOSE REELS - AUTO LIFTS



... WILLIAM H. WEISS as fleet sales engineer for the automotive replacement division of Thermoid Co.



... ALBERT E. ZEISEL, recently named vice president in charge of sales of the Entecite Welding Alloys Corp.



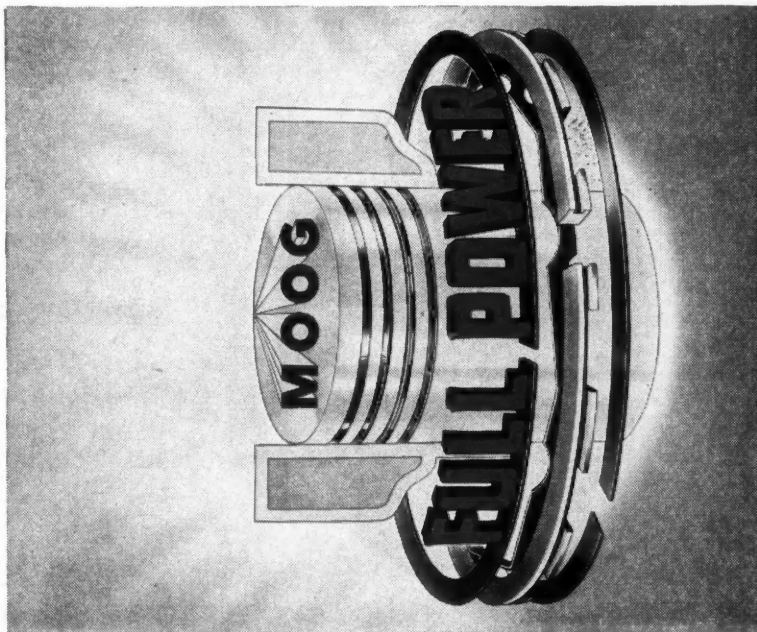
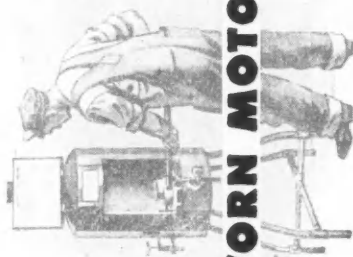
... E. S. LITTLE, who has been named merchandise manager of Gillette tires and tubes, products of United States Rubber Co.



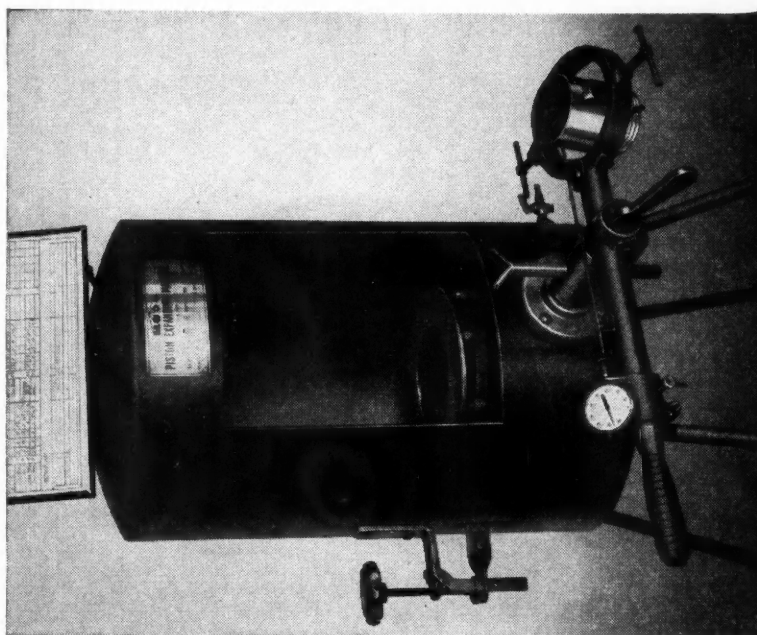
... JOSEPH NEWMAN as controller of Reo Motors, Inc. He formerly served in a similar capacity with Federal Motor Truck Co.

The Right Combination

TO GIVE FULL POWER IN WORN MOTORS...



**1. MOOG X-PLUS
PISTON RINGS**



**2. MOOG PISTON
EXPANDING METHOD**

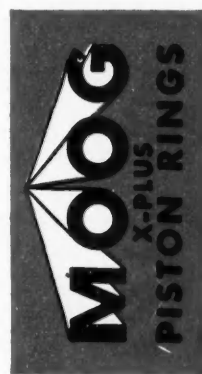
1. The Moog X-Plus Piston Rings with features that stop oil pumping, stop blow-by, restore power and save gasoline.

2. The Moog Piston Expanding Method that restores collapsed pistons, all types, permanently, in 40 to 60 seconds... an economical service by Moog Distributors.

For a Full Power Motor Reconditioning that satisfies car owners, eliminates costly comebacks, Moog offers the right combination. Write today for new Moog Ringliner Catalog.

MOOG PISTON RING CO.

Division: MOOG INDUSTRIES, INC. • ST. LOUIS 14, MO.



(U.S. PAT. NO. 1,771,198)

COPYRIGHT 1947 MOOG INDUSTRIES, INC.

Reefer Limitations

(CONTINUED FROM PAGE 94)

equal efficiency. All of this contributes to lower weight, cost, longer life of power unit, and reliability.

Principal elements of the power unit consist of a 4-cyl., 16-hp. Wisconsin air-cooled engine, a 3-hp. Carrier compressor and the centrifugal clutch, also made by Wisconsin and rated at 30 hp. The generator has an output of 32 amp., sufficient

not only to handle battery charging requirements but also to power the electric blowers inside the body which draw from 25 to 28 amp.

Air Circulation Vital

AS IS well known, air space and air circulation completely around the load are vital essentials of good refrigeration. Inside the body, at the front top, electric blowers induce circulation with air velocity of 4400 cu. ft. per min. at outlets which are

at ceiling level directed towards the rear. The air return is at the floor coming from under the specially designed floor racks which afford free passage of air from rear to front under the cargo. A channel to complete this air circuit is provided by stacking the load no higher than the bottom of air ducts and by providing several inches free space between the rear of cargo and rear doors when closed. Ribbed walls provide circulation space at the sides. Thus the cargo is wrapped in a blanket of circulating refrigerated air which intercepts heat leaking through the insulation, and carries it off before it contacts the cargo to raise its temperature.

We stress this point because refrigerated equipment without this feature only agitates or stirs up the cold air on top, with no inducement to force the air all the way around the cargo at rear and underneath. There can be only one result with this performance deficiency—uneven temperature distribution. It does not follow that a body providing excellent temperature distribution when empty will do the same thing when loaded. I am sure that a thorough temperature study in all locations in loaded equipment would reveal facts about uneven temperature distribution which would surprise some carriers.

Spray Defroster

DEFROSTING can be accomplished without disturbing the cargo by means of a water spray defrost system, the water inlet and drain being located outside.

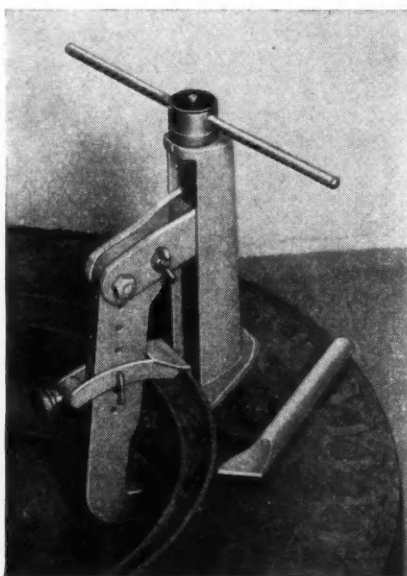
To defrost, water is sprayed over the top of the evaporator coils, causing the frost to melt off and collect in the drip pan from where it flows through a drain pipe to the ground. A water connection is provided under the trailer for the inlet. An ordinary garden hose nozzle end can be used for this purpose. The upper end of the water pipe is perforated and positioned horizontally over the top of the evaporator. The refrigerating unit is turned off during the process, which is of such short duration that the inside temperature is not appreciably affected.

END

(Please resume your reading on P. 97)

At Last—
a Really **FAST,**
EFFICIENT and
EASY-to-HANDLE
Big Tire Demounter
at **LOW COST!**

BISHMAN TRUCK TIRE REMOVER



No. 860, Pat. Pending. A Time Saver,
Labor Saver, Money Maker in any shop.

Speeds up tire work—conserves man power—handles disc wheel as well as other flat base types—all sizes up to 12-inch tires (8½ inch rims between flanges). Quickly adjusted to fit different size rims. Extra heavy all steel construction—strength and durability PROVEN in service.

LIFTS the Rim OUT—even when badly “frozen”—without damage to tire or rim! With tire on floor, the BISHMAN Truck Tire REMOVER is quickly clamped to rim, with the properly shaped pusher pressing against tire bead. Then, by turning the handle, the tire is pushed down while the rim is pulled up. No hydraulic or air power required. A single REMOVER will do the job by moving it around on the rim—or 3 or 4 REMOVERS may be used at one time for a real fast job. The low price and easy portability of this tool make it profitable for most shops to have at least 3 or 4 of them. Easily carried in service truck.

No. 860 TRUCK TIRE REMOVER, complete with special driver shown, dealer cost **\$29⁷⁵**

ASK YOUR JOBBER or Write Us

BISHMAN MFG. CO., OSSEO 4, MINN.

BISHMAN



It's GUARANTEED!



For 1 year or 25,000 miles in buses and trucks. For 1 year or 1000 operating hours in tractors. No attention needed . . . no replacements needed . . . no drop in efficiency . . . during the guaranteed service life!



Automotive Model AT1

BUTLER
COOLING SYSTEM

De-scaler AND RUST ELIMINATOR

\$4.95
EACH

Manufactured by Butler Engineering Company, P.O. Box 1699, New Orleans 11, La. Manufacturers of water correction equipment for automotive and industrial requirements—hot water, steam, Diesel. Butler De-Scalers are patented; other U. S. and foreign patents pending.

\$2.97 each
In lots of 12 or more in U.S.A.

**CURE YOUR
COOLING SYSTEM
TROUBLES Don't
NURSE them!
ORDER TODAY** →

BUTLER ENGINEERING COMPANY,
P.O. Box 1699, New Orleans 11, La.

Gentlemen: Please ship (fill in quantity**) Butler De-Scalers @ \$4.95 (@ \$2.97 in lots of 12) to:

COMPANY.....

STREET.....

CITY..... ZONE..... STATE.....

☐ Check or money order enclosed ☐ Ship C.O.D. ☐ Bill open account

MY JOBBER IS.....

**Systems having a capacity greater than 30 quarts require one unit for each 30 quart capacity or fraction thereof. Operators of large Diesel engines should write for recommendation of proper unit to fit equipment.

Graph System

(CONTINUED FROM PAGE 65)

than the elements of maintenance cost so that depreciation expense has a proportionately greater say in the shape of the cost per mile curve.

In passing, it is interesting to note the indicated increase in this portion of our operating costs as shown by the relationship of the two cost per mile curves. In the first case the cost per mile at replacement for

maintenance and depreciation was 1.72 cents while in the projected case it is 2.85 cents, an increase of 65.7 per cent in maintenance and depreciation cost.

Since most of our vehicles of a similar type do not vary appreciably in their annual mileage from the group average, we have plotted similar curves for various types of vehicles and used the mileage indicated as a general guide to the economical replacement point. Of course, if you have most of your vehicles right un-

der your thumb you would make checks to verify your conclusion.

If on the other hand, you had a fleet spread over a wide area that was impossible to follow closely, you would not be far wrong in working on this basis alone.

Curves Vary with Mileage

CURVE "A" in Fig. 2 shows the shape of the maintenance and depreciation cost per mile curve in the area of cheapest cost for this same group of vehicles which averaged 30,000 miles per year. The low point occurred at 50,000 miles and 20 months of service. Curve "B" has been weighted to show the effect of developing this same mileage at a rate of 12,000 miles per year. Here the low point is reached at 40,000 miles after 40 months of service. Curve "C" was similarly weighted to show the effect when mileage is increased to a rate of 54,000 miles per year. The low point is 54,000 miles after only one year in service.

Of course our ability to determine exactly all of the factors to be considered in weighting is open for discussion. These curves are presented only to bring out the point that each fleet operator must draw his own curves unless he knows that his operating conditions are exactly comparable to the references made.

Line Trucks Last Longer

FIG. 3 deals with line trucks and shows that their most economical life is about 10 years. This curve is low in cumulative maintenance cost during the last year as a result of deferring as much repair work as is possible. In developing the cumulative depreciation curve for this type vehicle we have separated body and chassis costs, each amounting to \$2000. We portrayed the body depreciation as a flat line representing the entire outlay, while chassis depreciation was developed in a more conventional manner using a rate of 45 per cent for the first year, 10 per cent for each of the next three years and then progressive steps in succeeding years of 8, 6, 4 and 3 per cent.

If you do not use this type of information for anything more than to prove that you were nearly right, it has served its purpose.

END

(Please resume your reading on P. 66)



The odds are 37 to 1 that your number won't win.

But when truck wheels spin, the odds are *all* against you. You lose because of excessive wear on axle, tires and differential parts. You lose valuable time . . . may even have to pay for towing.

You can avoid those losses by equipping each truck in your fleet with a NoSPIN Differential. It prevents wheel-spin!

The NoSPIN Differential gives full driving power to both rear wheels. Even if one wheel loses some traction, the remaining traction—plus all that of the opposite wheel—is available

to move the truck, because *both* wheels must rotate when power is applied.

This famous automatic-locking differential is available for most makes of trucks.

DON'T GAMBLE WITH WHEEL-SPIN! Find out how you can win with the NoSPIN Differential. Call your truck dealer or Truckstell distributor. Or send coupon below. The Truckstell Company, Union Commerce Bldg., Cleveland 14, O.



FREE Send for your free copy of this fully illustrated, 4-page folder. Tells you about all the advantages and savings of the NoSPIN Differential.

TRUCKSTELL
SPECIALIZED EQUIPMENT FOR PLUS PERFORMANCE

The Truckstell Company—Dept. CC-7
1274 Union Commerce Bldg., Cleveland 14, Ohio

Yes . . . I want to know more about the NoSPIN Differential. Please send me free descriptive literature together with name of my nearest Truckstell distributor.

Name.....

Address.....

City..... Zone..... State.....



NoSPIN Differential

A product of
DETROIT AUTOMOTIVE PRODUCTS CORP.
(Formerly Thornton Tandem Co.)
DETROIT, MICHIGAN



TAKE A TIP FROM ONE WHO SPEAKS FROM EXPERIENCE

For Better Brakes..

AN UNBEATABLE COMBINATION!

Wagner

LOCKHEED HYDRAULIC BRAKE PARTS

Wagner Lockheed Master Cylinder and Wheel Cylinder Kits include all essential parts for a specific job. Also available as individual parts and as completely assembled cylinders.

Wagner

LOCKHEED NO. 21 BRAKE FLUID

An all-season fluid that functions perfectly under all driving temperatures. Used by car manufacturers and recommended for all hydraulic brakes.

Wagner

CoMaX BRAKE LINING

Unsurpassed for quick, safe, smooth stops. Long-lived because the ingredients wear slowly; doesn't compress or swell; uniform frictional qualities. Produced in rolls, blocks, sets or slabs. For details, consult nearest Wagner jobber, or write us.

Wagner Electric Corporation

6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • **MoKot**
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

A47-2

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

123

GMC Diesels

(CONTINUED FROM PAGE 74)

ging. This also contributes to a more thorough scavenging of exhaust gases.

Because of improved scavenging and increased air supply it was found feasible to increase the delivery of the fuel injectors. Each injector now is calibrated to deliver 70 cmm. of fuel instead of 60. The net result of these major improvements has been

to increase horsepower output of both engines by 21 per cent. On the 4-71 it represents an increase from 110 hp to 133 while on the 6-71 the boost is from 165 to 200 hp.

A single disc type clutch with spring damper and fitted with toggle linkage to reduce disengaging effort is standard on all models. The 14 in. size is used on the "750" models, the 15 in. size on the others.

On the front axles for models 900 and up the distance between the king

pin centers has been increased by ten inches—from 57¾ to 67¾ in.—and the I-beam section heaved up to increase axle strength by some 32 per cent. To secure better road stability with the wider front axles, frame side rails formerly tapered in front are now parallel throughout their entire length. The new frames have pressed steel channel side members with ¼ in. angle stress absorber on ADC and ADF750 models and ADC and ADCR900 models; the others have ¼ in. channel stress absorbers.

The transmission set-up varies with different models. Five-speed synchromesh overdrive is standard on the "750's," optional being the five-speed direct in fifth main transmission with or without a three-speed auxiliary. Standard on the ADC900 is the five-speed synchromesh direct in fifth, in combination with a three-speed helical constant mesh auxiliary. The ADCR900 has as standard the five-speed synchromesh overdrive; and a five-speed direct in fifth synchromesh as optional. The 950 and 970 models are fitted with the five-speed synchromesh direct in fifth, in combination with a three-speed helical constant mesh auxiliary.

The recirculating ball and nut sector type steering gear is used on all models, contributes greatly to steering ease. A 40-gallon fuel tank is mounted outside the right frame rail on all models. The radiator on all models has a vertical flat tube and fin core, is mounted on rubber, and has thermostatically controlled shutters and temperature control.

Rear axle equipment varies with different models as follows: On 750 models standard equipment is a two-speed full-floating axle with spiral bevel ring gear and pinion and radius rod drive. Selection of high and low ranges is by an air-operated shift, low range having a planetary reduction between the ring gear and differential. Ratios: 5.43 & 7.39 or 6.71 & 9.13. Optional, at extra cost; heavy duty two-speed axle, ratios 6.17 & 8.39 or 6.67 & 9.06; double reduction, ratios 6.42, 7.08, 7.84 or 8.74, with auxiliary transmission. The same type of basic two-speed axle is found on the ADCR900 with ratios of 6.17 & 8.39; or 6.67 & 9.07 as standard equipment.

(TURN TO PAGE 126, PLEASE)

1912 1947

Keeping Trucks Busy for 35 years!

—that's the record
of the Servis Recorder





★ Thirty-five "milestones" along the road of BETTER TRUCK MANAGEMENT — that's the life span of the Servis Recorder. During these years, this little device on trucks has been helping busy truck managers—

- record all idle time
- provide better routing
- avoid unnecessary overtime
- prevent speeding and accidents
- save gasoline and tires
- reduce insurance premiums

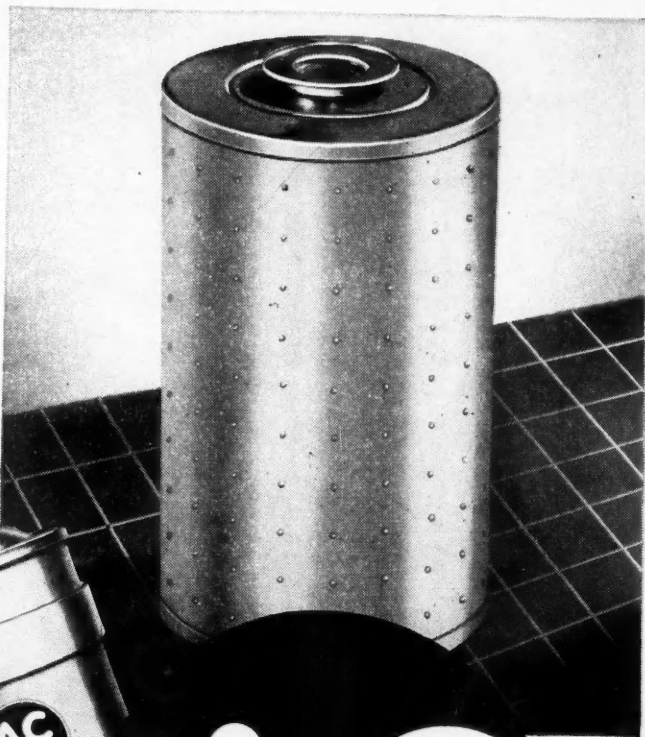
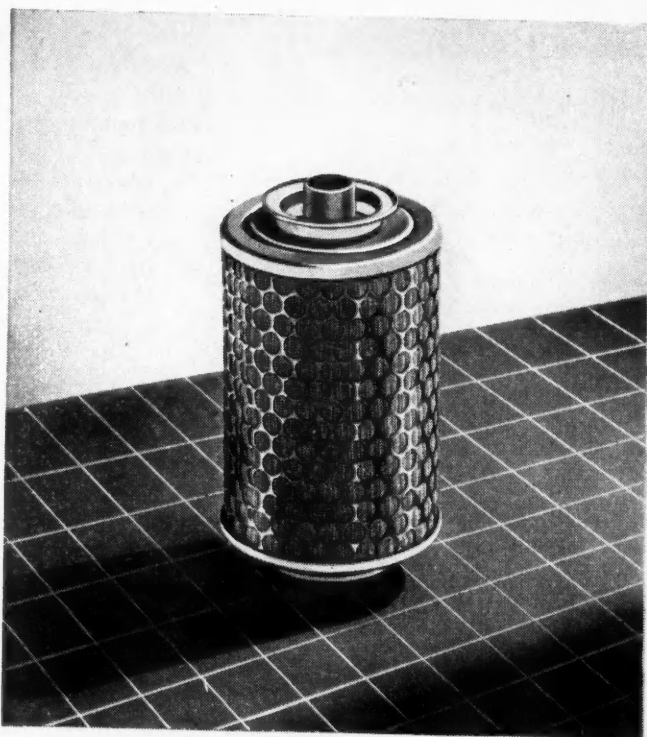
That's the 6-point story, in brief, of why the Servis Recorder is regarded as "first aid" by efficient truck operators everywhere. Moreover, the Servis Recorder helps the drivers, too, because it is fair to all—it evens up the work among them. "The good drivers like it and the other kind become better drivers," reports a truck manager. *Write for our booklet.*

THE SERVICE RECORDER COMPANY
1375 Euclid Avenue, Cleveland 15, Ohio



The Servis Recorder

Tells Every Move Your Truck Makes



Solve your filtration problems by changing to AC's specially processed, long fibre cotton Replacement Elements. Fit all popular makes of oil filters. If you have no oil filters, equip with AC's for maximum protection against fuel waste, power loss, and engine wear.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

AC

OIL FILTERS

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

125

GMC Diesels

(CONTINUED FROM PAGE 124)

ADC900 models are fitted with the double-reduction full-floating axle and radius rod drive. The primary reduction has a hypoid bevel ring and pinion; secondary, helical spur gears. Available ratios are: 6.42, 7.08, or 7.84.

The 950 and 970 models are equipped with full-floating worm

drive axles, the set-up consisting of two driving axles with through drive to the second axle, floating spring suspension, and parallelogram arrangement of torque and radius rods. As optional equipment they offer double-reduction axles. Worm drive ratios on the 950 are: 4.72 or 6.17; on the 970: 6.80, 8.20, or 9.00. Double-reduction optional axle ratios on the 950 are: 6.84, 7.50, or 8.27; on the 970: 7.33, 8.15, or 9.11.

Hand brakes are of propeller shaft type—14 x 3 in.—with two shoes on

the 750 and 900 models, four-shoe on the 950 and 970.

H-D Air Brakes

MAIN BRAKES are of heavy-duty air-operated type with slack adjusters on all models. They are of cast two-shoe type with nickel iron drums on the ADC and ADCR750; cast iron front and nickel iron rear on the ADFR and ADF750 and on 900 models; cast iron front and rear drums on the 950 and 970.

Brake sizes are as follows: 17 $\frac{1}{4}$ x 3 in. is standard on the front for all models. On 750 models, the 17 $\frac{1}{4}$ x 5 $\frac{1}{2}$ in. brake is standard at the rear. On the 900 models, 16 $\frac{1}{2}$ x 7 is standard on the rear, while the 950 has 16 $\frac{1}{2}$ x 6 in. The 970 offers 16 $\frac{1}{2}$ x 7 with worm drive, 16 $\frac{1}{2}$ x 6 if the optional double-reduction axle is specified.

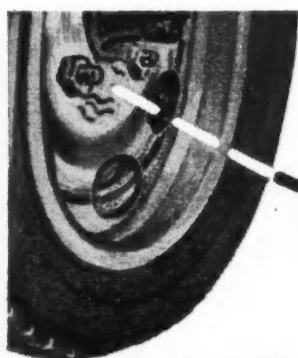
Propeller shafts on the 750 and ADCR900 are of tubular type with needle bearing joints, the center joint being supported by a rubber-encased sealed ball bearing. The ADC900 has two close coupled needle bearing joints with a splined shaft and yoke between the main and auxiliary transmissions; and two needle bearing joints and tubular axle shaft.

The spring set-up on the 950 and 970, dual axle models, consists of semi-elliptic springs at the front, reversed semi-elliptics at the rear. The latter are attached to ball bearing mounted trunnion brackets at the center. The flat ends contact wear plates on the axle housings.

Minimum tire equipment for all models is 10.00/20-12-ply front, and rear duals, on 10-stud forged Spok-steel wheels. Other sizes are available.

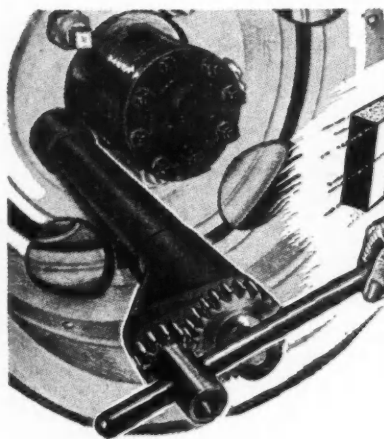
END

(Please resume your reading on P. 76)



STOP LOOSE NUTS

Before they CAUSE TROUBLE!



POWERENCH-TEST

**Every Wheel
at every stop
and BE SURE your
truck keeps rolling**

Checks reveal that *one out of every two trucks rolling today goes on the road menaced by loose wheel nuts!*

POWERENCH makes it easy to test for loose nuts... and a complete check takes only a few minutes.

Install a **POWERENCH** on each of your trucks. It's the only way you can scientifically guard against loose nuts — thus eliminating expensive road delays and shop repair layovers!



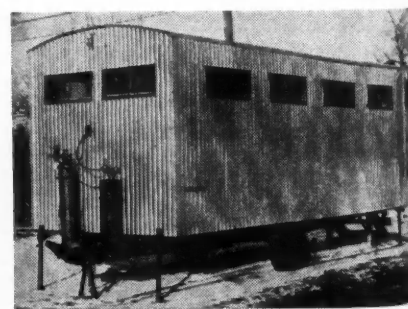
To Loosen stubborn nuts
To Check for loose nuts
To Remove nuts from
broken studs

**ONLY
\$19⁸⁵**

Powerench Div., Dept. 4
B. K. SWEENEY MFG. CO.
1601 23rd Street, Denver 17, Colorado

I would like a free demonstration of your Powerench. Please advise the name and address of your nearest distributor.

_____ (Name)	_____ (Company)
_____ (Type operation—No. trucks)	_____ (Street, Zone)
_____ (City)	_____ (State)



Portable machine shop for a western utility is mounted in this Monroe two-wheel trailer. Cranking raises or lowers the patented swivel hitch to exact hitching position, then levels the trailer for safe road travel

KRAFT SYSTEM RECAPPING HEADQUARTERS

Aberdeen, Washington, General Tire Service
Akron, Ohio, General Tire Service, Inc.
Alma, Mich., Giles Tire Service
Alpena, Michigan, Richards & Hodapp
Alton, Illinois, Alton Tire Sales Co.
Albuquerque, N. M., Albuquerque Tire Co.
Alliance, Ohio, M. W. Third General Tire Serv. Inc.
Amarillo, Texas, Baker Askew Tire Co.
Anderson, S. C., Sullivan Tire Service
Anniston, Alabama, Lena Styles Tire Co.
Appleton, Wisconsin, Ray's Tire Co.
Artesia, N. M., Clyde Parrish Oil Co.
Ashland, Kentucky, Wurts Brothers
Atlanta, Georgia, General Tire Service Co.
Augusta, Ga., General Tire Supply Co.
Austin, Texas, Reed Sales Co.
Aurora, Ill., Aurora Tire Service, Inc.
Bakersfield, Calif., Goodwin General Tire Serv. Inc.
Baltimore, Maryland, O'Toole General Tire Co.
Batavia, New York, Harry E. Slocum, Inc.
Battle Creek, Michigan, Bill Wood's Auto Serv.
Bay City, Mich., Harold Alexander
Bellefontaine, Ohio, Logan Tire Co.
Benton Harbor, Michigan, Benson Tire Service
Binghamton, N. Y., Tom Lawler General Tires, Inc.
Birmingham, Ala., Drennen General Tire Co.
Bloomington, Ill., Thornton & Anderson
Boise, Idaho, Hardy Bros.
Boston, Mass., General Tire Co.
Bradford, Pa., Motor Inn Filling Station
Bridgeport, Conn., Bridgeport Gen. Tire Co.
Bronx, N. Y., Bronx General Tire
Brooklyn, N. Y., Kings County Gen. Tires, Inc.
Brookville, Pa., Auto Service Station
Bryan, Ohio, Mac's Tire Shop
Buffalo, N. Y., Parshall-Dowdell Gen. Tires
Burlington, N. C., The General Tire Supply
Burlington, Vt., Yandow Motor Co.
Butler, Pa., Ray Andre
Butte, Montana, Knivell Tire Service
Camden, N. J., Camden Storage Battery Co.
Canton, Ohio, Sampson General Tire Co.
Cedar Rapids, Iowa, Allen Motor Co.
Chambersburg, Pa., William R. Wilder
Charleston, W. Va., J. E. Ratliff, Inc.
Charlotte, N. C., Myers Tire Co.
Charlottesville, Va., Barr Tire Co.
Chattanooga, Tenn., Sidney Scott Tire Co.
Cheyenne, Wyo., Chief Oil Corp.
Chicago, Illinois, Dunne General Tire Co.
Chico, Calif., Jones Auto Service
Chillicothe, Ohio, Art Howson's Tire Service
Cincinnati, Ohio, Sohngen & Bischoff
Clarksburg, W. Va., Barman Tire & Sales Co.
Cleveland, Ohio, Shea General Tire Co.
Colorado Springs, Colo., Dostal-Howard Tire Co.
Columbia, S. C., Columbia Tire Service, Inc.
Columbia, Tenn., Russell & Bartlett
Columbus, Ohio, General Tire Sales
Corpus Christi, Texas, Dickinson Gen. Tire Service
Cortland, N. Y., Tellmadge Tire Service
Covington, Va., County Motors
Crawfordsville, Ind., Dice Tire Service
Dallas, Texas, Daltex Company, Inc.
Danielson, Conn., Danielson Oil Co., Inc.
Danville, Illinois, George B. Satterwhite Co.
Davenport, Iowa, Callen Tire Sales
Dayton, Ohio, Knapp General Tire Service, Inc.
Deadwood, S. D., Eddie's Tire & Glass
Decatur, Alabama, Ryan Tire Service
Denver, Colo., Joe Kavanagh, Inc.
Des Moines, Iowa, Iles-McKinney & Wolf
Detroit, Mich., General Tire Service
Dover, N. J., Schwalb Tire Co.
Durham, N. C., Ingold Tire Co.
Dunkirk, N. Y., Bridge General Tire
Elizabeth, N. J., John J. Cross Inc.
Elizabeth City, N. C., City Vulcanizing Co. Inc.
Elkins, W. Va., General Tire & Battery Co.
Elmira, N. Y., McKinnon General Tire Inc.
El Paso, Texas, J. R. Turner
Elyria, Ohio, George Hermann
Erie, Pa., Chaffee Tire Co.
Eureka, Calif., James S. Cloney
Evansville, Ind., Van Winkle-Stagg Inc.
 Fargo, N. D., Haggart's Service, Inc.
Flint, Michigan, Flint General Tire Co.
Fond du Lac, Wisconsin, Hayward Tire Co.
Ft. Lauderdale, Fla., Bill Acenbrack Co.
Fort Wayne, Ind., Sagstetter General Tire Co.
Ft. Worth, Texas, General Tire Service
Franconia, Montgomery Co., Pa., Norman Bersey
Fremont, Ohio, Hamilton Tire & Battery
Fresno, Calif., LeMoss-Smith Tire Co.
Gainesville, Fla., University Chevrolet Co., Inc.
Galveston, Texas, Adolphus Tire Co.
Gettysburg, Pa., Reel Tire Co.
Gilroy, Calif., Petersen's Tire Service
Goldsboro, N. C., Prince Tire Co.
Grand Island, Neb., Service Senter
Grand Rapids, Michigan, Bill Elder
Great Bend, Kansas, Hertel Tire Co.
Green Bay, Wisc., Green Bay Tire Service
Greensboro, N. C., H. Roger Jones, Inc.
Greensburg, Pa., A. L. McClintock
Greenville, S. C., Hunter Service Station
Greenwood, Miss., Short Tire & Oil Co.

Hamilton, Ohio, Marsh-Schneider Tire Co.
Harlan, Ky., Harlan Retreading Co.
Hartford, Conn., The Auto Tire Co., Inc.
Harrisburg, Pa., V. D. Leisure Co.
Harrisonburg, Va., Glen Shomo
Hattiesburg, Miss., Hattiesburg Service Station
Hayward, Calif., General Tire Sales & Service
Hickory, N. C., Hickory Tire & Battery Co.
High Point, N. C., Greene Tire Service Inc.
Holland, Mich., Bill's Tire Shop
Hornell, N. Y., Hornell General Tire Service
Houston, Texas, General Tire Sales Co.
Huntsville, Ala., Huntsville Tire Co.
Hutchinson, Kans., Glenn Sheets Gen. Tire & Batry.
Indianapolis, Ind., General Tire Co.
Inglewood, Calif., Inglewood Tire Service
Jackson, Mich., General Tire & Treading, Inc.
Jackson, Miss., Gear Tire & Service, Inc.
Jacksonville, Fla., Pruitt Tire Co. Ltd.
Jamestown, N. Y., Emblem Oil Co.
Jersey City, N. J., McGuinness General Tire
Johnstown, Pa., The Del Boring Tire Service
Joplin, Mo., R & S Motor Sales Co.
Kalamazoo, Mich., Otto Kimm Tire Co.
Kalispell, Montana, Kalispell Tire Service
Kansas City, Mo., McDowell Tire Co.
Kent, Ohio, Kent Nash Sales
Kingsport, Tenn., Young's Tire Service
Klamath Falls, Ore., Monarch Tire Service
Knoxville, Tenn., General Tire Sales Co.
Lancaster, Ohio, Fred Shaeffer's Tread Shop
Lansing, Mich., Roberts Tire Sales, Inc.
Latrobe, Pa., James J. Di Primo
Lawrence, Mass., Albert E. Schlott
Lawrenceville, Va., Brunswick Rubber Co.
Lebanon, Tenn., McDowell Tire Co.
Lexington, Idaho, General Tire & Retreading Co.
Lexington, Ky., Lexington Gen. Tire Co.
Liberty, Ky., Liberty Tire & Recap Co.
Lima, Ohio, W. A. Pfau
Lincoln, Neb., Bob Russell Oil Co.
Lodi, Calif., Holz Tire & Recap Service
Long Beach, Calif., Richardson Tire Co.
Long Beach, N. Y., J & J Miles Rubber Co.
Long Island City, N. Y., Astoria Tire Co.
Longview, Texas, McCann Tire Service
Los Angeles, Calif., General Tire Service Co. Inc.
Louisville, Ky., Hurry-Up Broadway
Lubbock, Texas, Woody Tire Co.
Lynchburg, Va., The Lynchburg Garage
Macon, Ga., Gordon Bush Tire Co.
Madison, Wisc., Monona Tire Company, Inc.
Malvern, Ark., Malvern Tire Co.
Marietta, Ohio, The Tire Shop
Massillon, Ohio, Sampson's General Tire
Martinsburg, W. Va., Romberg Bros.
McAllen, Texas, Carey General Tire Sales Co. Inc.
McKinney, Texas, Tunnell Tire Co.
Meadville, Pa., Warren C. Smith Motors
Memphis, Tenn., Steepelton General Tire Co.
Miami, Fla., General Tire Co. of Miami
Middletown, Ohio, Russ Dempster Gen. Tire Sales
Milwaukee, Wisc., General Tires Inc.
Minneapolis, Minn., The General Tire Co.
Mobile, Ala., Delaney Specialty Co.
Montevideo, Minn., Anderson's Super Service
Montgomery, Ala., Moody Tire Service, Inc.
Montpelier, Vt., J. Leo Johnson Corp.
Mt. Pleasant, Mich., "Bill" Murray's Tire Service
Muncie, Ind., Clark's Service Co., Inc.
Murfreesboro, Tenn., McDowell Tire Co.
Nacogdoches, Texas, Nacogdoches Tire Co.
Napa, Calif., West's Tire Shop
Nashville, Tenn., General Tire Co.
Newark, N. J., The General Tire Co.
Newark, N. Y., McDougall's Service Garage
Newburgh, N. Y., Harvey Brothers
Newcastle, Ind., Henry County Tire Store
New London, Conn., Tire Service Co.
New Orleans, La., Jimmie Hanemann Tire Service
New York City, New York General Tire Co.
Niagara Falls, N. Y., Kelly-Horak Gen. Tire Co., Inc.
Norfolk, Va., Joyes Tire Co.
Norristown, Pa., Reiff & Stephens
Norwich, Conn., A. J. Senft & Son
Ocala, Fla., Jack Tucker's Service
Oil City, Pa., Hemlock Oil Co.
Oklahoma City, Eckhard Morse General Tires
Olean, N. Y., Sullivan & Murray Co.
Omaha, Neb., Miller-Knuth Chevrolet Co.
Orange, N. J., Lackawanna General Tire Co.
Orlando, Fla., King's General Tire Service
Paducah, Ky., Potter Tire & Battery Co.
Painesville, Ohio, Hach's Auto Service
Panama City, Fla., Central Tire Service
Paris, Illinois, Paris General Tire Co.
Parkersburg, W. Va., Mahone Tire Service
Paterson, N. J., Brustlin Bros.
Peoria, Ill., Murphy-Clark
Philadelphia, Pa., Camell & Bradburn
Philomath, Ore., A. E. Albertsen
Phoenix, Ariz., The General Tire Co. of Phoenix
Piqua, Ohio, McShane Tire Sales
Pittsburgh, Pa., Campbell General Tire Co.
Pittsfield, Mass., Pittsfield Retread & Tire Co.
Plainview, Texas, Kiker's Service Station
Pontiac, Illinois, Potters Tire Hospital

Pontiac, Michigan, Pontiac General Tire Co.
Portland, Oregon, Commercial Tire Co., Inc.
Portsmouth, Va., Royal Garage
Pottsville, Pa., Leisure-Black
Poughkeepsie, N. Y., Gauthier General Tire
Providence, R. I., General Tire Service, Inc.
Queens Village, N. Y., Breitfeller Sales, Inc.
Raleigh, N. C., Savage Tire Co.
Rapid City, S. D., Eddie's Tire & Glass
Reading, Pa., General Tire Co. of Reading
Reidsville, N. C., Reidsville Tire Co.
Richmond, Va., Marlowe Tire Co.
Rio Vista, Calif., Holz Tire & Recap Service
Riverside, Calif., Rome's Tire & Auto Supply
Rochester, N. Y., Scanlon-Lewis Gen. Tires, Inc.
Rochester, Pa., Beco Sales & Service
Rupert, W. Va., Johnson Bros.
Sacramento, Calif., Earl C. Reed
Saginaw, Michigan, Valley Tire & Repair Co.
St. Joseph, Mo., Tri-State Tire and Supply Co.
St. Louis, Mo., General Tire Co. of St. Louis
St. Paul, Minn., General Tire Co. of St. Paul
Salem, Mass., Ted's Master Service
Salem, Oregon, State Tire Co.
Salinas, Calif., Don Hultz
Salisbury, Md., Duncan Bros.
Salt Lake City, Utah, Wheeler Gen. Tire Co.
San Angelo, Texas, Red Covington Tire Service
San Bernardino, Calif., General Tire Service Co.
Sandusky, Ohio, Brinker's Service
Santa Monica, Calif., Link Anderson, Inc.
Saranac Lake, N. Y., Adirondack Tire Service
Scranton, Pa., A. H. Steppacher
Seattle, Wash., General Tire Co.
Sharon, Pa., John B. Lewis
Sheboygan, Wisconsin, Grasse Bros. Oil Co.
Sioux City, Iowa, O'Keefe General Tire Co.
Somerset, Pa., North Side Motors
Sonoma, Calif., J. S. West & Co.
South Bend, Ind., The Singer General Tire Co.
South Pottstown, Pa., Yahner's General Tire Co.
Spartanburg, S. C., Whitlock Tire Service
Spokane, Wash., Tire Service Co.
Steubenville, Ohio, Shaffer's General Tires, Inc.
Syracuse, N. Y., Syracuse General Tire Corp.
Tacoma, Wash., Alger Tire Co.
Tampa, Fla., The Pioneer Tire Company, Inc.
Terre Haute, Ind., Fischer General Tire Store
Toledo, Ohio, Richard General Tire Co.
Traverse City, Mich., Doug. Linder Tire Co.
Trenton, N. J., Duffy Tire Co.
Troy, N. Y., Williams Tire & Rubber Co., Inc.
Tulsa, Okla., General Tires, Inc.
Tyler, Texas, Prickett-McElroy Tire Co. Inc.
Uniontown, Pa., Steiner Service Co.
Utica, N. Y., Geo. L. Aitken, Inc.
Vancouver, Wash., McNab's Service
Ventura, Calif., Warren General Tire Co.
Victoria, Texas, Allen Tire Recapping Service
Visalia, Calif., Perry Tire Service
Waltham, Mass., Roy Johnston's Tire Shop
Warren, Ohio, Varley's Warren General Tires
Washington, D. C., Croker General Tire Co.
Waterloo, Iowa, Schukie Motor Co.
Watertown, N. Y., Holton & Tegtmeyer, Inc.
Watertown, S. D., General Tire Service
Watsonville, Calif., Carroll's Truck Stop
Wewoka, Okla., Matheny's Auto Supply
Wichita Falls, Texas, Earl Hodges Tire Service
Wichita, Kans., Boone-Scotty Gen. Tires, Inc.
Wilkes-Barre, Pa., McCarthy Tire Service
Wilmington, Del., C. W. Hazel
Winona, Minn., Kalmes Tire Service
Winston Salem, N. C., Parrish Tire Co.
Worcester, Mass., Bowker-Hamblin-Malmquist, Inc.
Yonkers, N. Y., Yonkers General Tire
York, Pa., Huber Tire Co.
Youngstown, Ohio, Safety Tire Co.



THE GENERAL TIRE & RUBBER COMPANY • AKRON, OHIO

High Compression Engine

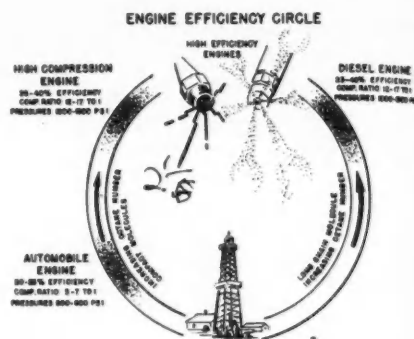
(CONTINUED FROM PAGE 43)

buretor. Ignition is high frequency, not standard, and the pistons are cooled with squirts of crankcase lube much like the Detroit Diesels.

Whereas engines have been compared on the basis of pounds per cu. in. displacement heretofore, the high compression engine when compared with a conventional engine must be

viewed from the standpoint of pounds per bhp. On this basis they rate about the same.

Kettering points out that the key to higher efficiency—improved fuel economy—lies in increasing compression ratio. The new engine shows an improvement in fuel economy of around 35 per cent over best conventional motor car practice. Drawing at right is used to demonstrate where we are heading. When you take the path around the circle to the right, you travel the fuel oil high-



way with the high efficiency diesel engine. When you take the path to the left, you travel the gasoline highway. At present the art is represented by the engine near the bottom at the left. Kettering's engine, the engine of a few years from now, is the one at the top left.

The noteworthy fact is that when we hit the top of the scale with the new engine it matches point for point the characteristics of the diesel engine, except for the fuel. You can't run the diesel on the 100-Octane leaded fuel and by the same token you can't run the gasoline engine on the diesel fuel.

At Least 100 Octane Fuel

NOW A WORD as to fuel. The new engine requires what is known as a sensitive type of fuel having a research octane number of about 100. It is not commercially available today but those in the know claim it can be produced by the refiners once they can switch facilities to make it. Naturally that will take time. However, (TURN TO PAGE 132, PLEASE)



SUCCESSOR TO CHARLES F. KETTERING AS HEAD OF GENERAL MOTORS RESEARCH IS...

- ☐ JOHN THOMAS SMITH
- ☐ CHARLES L. McCUEN
- ☐ HENRY M. HOGAN
- ☐ DR. VANNEVAR BUSH

Answer on P. 134

MEET THE NEW EVANS! POWERFUL, SUPER-DELUXE HEATER-DEFROSTER

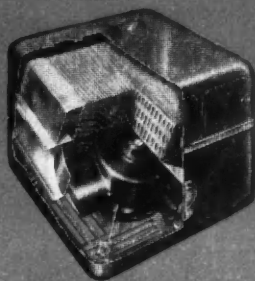


MODEL MD-10

Compact, Super Power for the Toughest Heating Jobs!

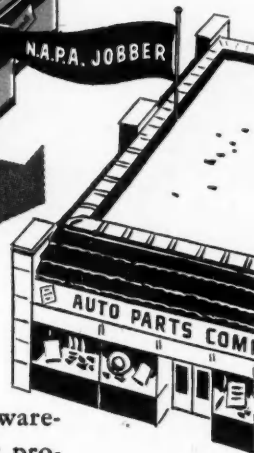
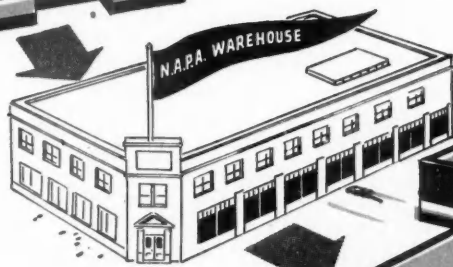
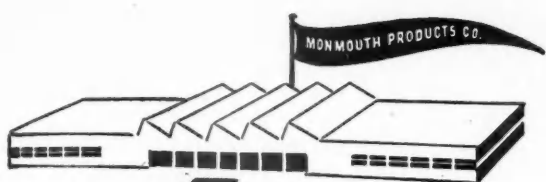
HERE'S the latest, greatest unit in the heater field—and it's EVANS! Packed with *Super* power... engineered to surpass in performance the most rugged and powerful vehicle heaters on the market... it's the great new EVANS Super-DeLuxe Heater-Defroster! Get your fleet set for Winter with this compact, heavy-duty beauty.

Note the famous EVANS Airfoil Fan, a new heavy-duty bus-type motor, an extra-large heater core, Super-defroster outlets for every type of cab, five controllable, directional outlets for heat... all EVANS-Engineered into an attractive, compact case.



EVANS
PRODUCTS COMPANY
PLYMOUTH, MICHIGAN

THERMO-AIRE
DIVISION



Assembly line distribution brings *mass production economies* to repair trade

TO the unexcelled quality of Monmouth Replacement Parts we add two features that save time and money for the repair man.

First, complete assemblies of these parts are packaged in distinctive, properly marked boxes.

Second, we distribute these parts with maximum efficiency through N. A. P. A. District Warehouses and N. A. P. A. Jobbers located to best serve the automotive replacement trade

in each section of the country. These warehouses maintain balanced and properly proportioned inventories of all wanted parts to render the most efficient service. This is the most complete and economical method of distribution yet devised. It corresponds in economy and efficiency to the assembly lines used in the mass production of automotive vehicles themselves.

thus, *Monmouth* is the **BUY WORD** to profits in the repair trade

MONMOUTH PRODUCTS COMPANY • CLEVELAND, OHIO

**FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS**

Monmouth
Trade Mark *is the name*



*Your
NAPA Jobber
is a Good Man
to Know!*

High Compression Engine

(CONTINUED FROM PAGE 130)

if engine progress is paced by the fuel, the two can be made to meet sometime about five years from now.

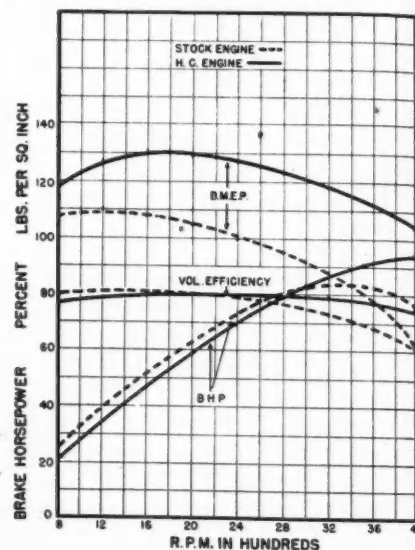
Although the HC engine has just been announced, its creation represents a background of many, many years of study at General Motors Research Laboratories. Perhaps it would not be ready now were it not for the

work done in developing triptane. The octane rating of triptane is so far above the scale of known petroleum fuels as to make possible an engine of almost limitless compression ratio, the actual limit being the mechanical difficulty of getting combustion chambers of small enough volume and clearance for valve action and breathing. At first, they worked with single-cylinder engines and got the compression ratio up around 15 to 1, without knocking. Later when they built the first of the six-cylinder

engines, they found triptane no longer necessary. They knocked compression ratio down to 12.5 to 1 and found that the sensitive 100-octane gasoline worked fine and without knock.

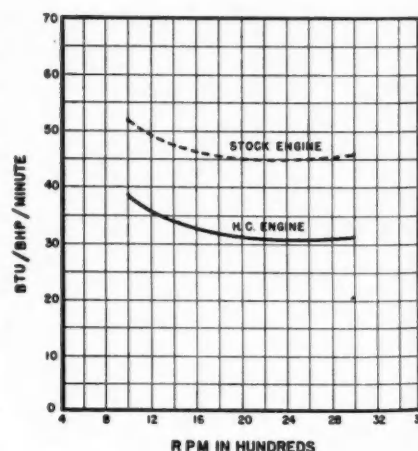
The comparison of engine performance as between the new and conventional is found below. Note par-

ENGINE PERFORMANCE CURVES



ticularly the increase in brake mean effective pressure for the high compression engine. Like the diesel, the HC engine runs cooler since more of the heat energy in the fuel is converted to work. The improvement is shown below. This means that

HEAT REJECTION COMPARISON



with a well designed HC engine we can use smaller radiators and a more compact cooling system, although an oil cooler may have to be added to cool engine lube.

The payoff, of course, is in fuel economy. With more engine power, (TURN TO PAGE 134, PLEASE)

when brake lining problems confront you consult **GRIZZLY**

REG. U. S. PAT. OFF.

For over thirty years, leading service managers and fleet owners have relied on Grizzly to provide fast, practical solutions to countless brake lining problems. Constant laboratory research, alertness to new developments and invaluable experience gained in over thirty years' manufacturing experience,

place Grizzly in an excellent position to solve brake lining problems of widely divergent natures.

The next time you are faced with a brake lining problem, bring it to Grizzly—one of the largest, most dependable producers of fine brake lining for both automotive and industrial fields.

There's a Grizzly Distributor near you — call him today!
Grizzly Manufacturing Company, Paulding, Ohio

"Bear in Mind" . . . ask for

GRIZZLY
REG. U. S. PAT. OFF.
BRAKE LINING



*Fleet owners find that it pays
to standardize on*

SEALED POWER *Heavy Duty* **PISTONS**

...they serve better, longer



RUGGED INTERNAL CONSTRUCTION

assures long life in heavy duty service, with extra material added for correct heat transfer and extra strength.

FINEST ALUMINUM ALLOY NO. 132

is used exclusively in Sealed Power Heavy Duty Pistons.

CAM GRINDING

assures correct shape and increased bearing area at operating temperatures.

T-SLOT DESIGN

assures lower and more uniform temperature throughout piston.



KEEP YOUR WAR BONDS! GET \$4 FOR \$3!

IT WILL PAY YOU TO SPECIFY SEALED POWER HEAVY DUTY PISTONS

SEALED POWER CORPORATION

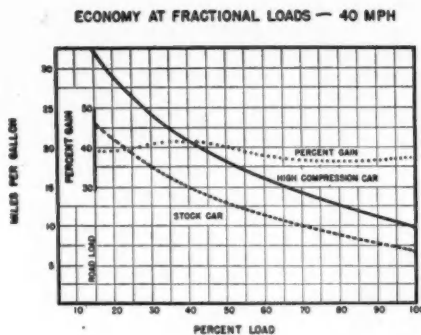
MUSKEGON, MICHIGAN • IN CANADA: STRATFORD, ONTARIO

High Compression Engine

(CONTINUED FROM PAGE 132)

better performance, we are promised an increase of around 40 per cent with the HC engine at part loads as shown at right. Constant speed economy is even higher at around 30 mph, drops to an increase of 33 per cent at 70 mph.

What Kettering has emphasized is that balanced engine design takes in



two kinds of factors—fuel factors and engine factors. One has to do with

improvements in fuel, the other with improvements in mechanical design. You can't do the job with one element alone; both have to travel the road together.

HC Engine vs. Diesel

SO FAR as fleetmen are concerned it is well to remember that this is a passenger car engine, not a truck engine. That does not mean it can't be adapted to trucks when the fuel is available at gas pumps the country over. In fact it is interesting to speculate on the relative merits of the HC engine and the diesel engine when the HC has reached the prominence in Fig. 3. Note that both engines have the same order of efficiency, the same range in compression ratio, the same order of combustion pressures. The only thing different is the fuel.

Can the HC job supplant the diesel for certain applications. Perhaps it may, who knows. Much will depend upon the relative cost of the fuels, since the diesel still may enjoy a differential in price economy. Too, the designers will have to know more about the HC engine in order to change the shape of the torque curve to suit truck requirements.

In any event, some day in the not too distant future there may be a showdown and at that time the best job will surely win.

END

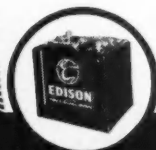
(Please resume your reading on P. 44)

WHAT ONE MAN CAN DO

You often hear it said, these days, that it is no longer possible for a man to get ahead on his own . . . that initiative, individual worth and hard work no longer count for anything.

The easiest way to refute such an idea is to cite the example of Thomas Alva Edison. By tireless perseverance, by unbelievably hard work, plus that initial quality of his which for lack of a better word we call genius, Edison won fame and honor throughout the world. His inventions made him universally revered as a benefactor of mankind. Had he sought riches alone, he could have become a millionaire many times over.

Man cannot climb much farther on the ladder of the world's esteem than did this man who was born in obscurity in a small Ohio town. In these days of doubt and confusion, it is well to remember such a man as Edison, who, under the American way of life which gives everyone the opportunity to better himself through his own efforts, molded his destiny with nothing but these three ingredients . . . native ability; a willingness to work hard; self-reliance.



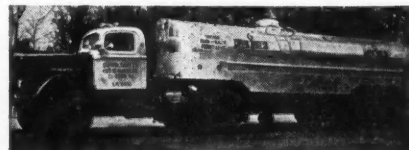
EDISON

BATTERIES

THOMAS A. EDISON, INC., EMARK DIVISION
PLANT NO. 1, KEARNY, N. J.

you can always rely
on an **EDISON**

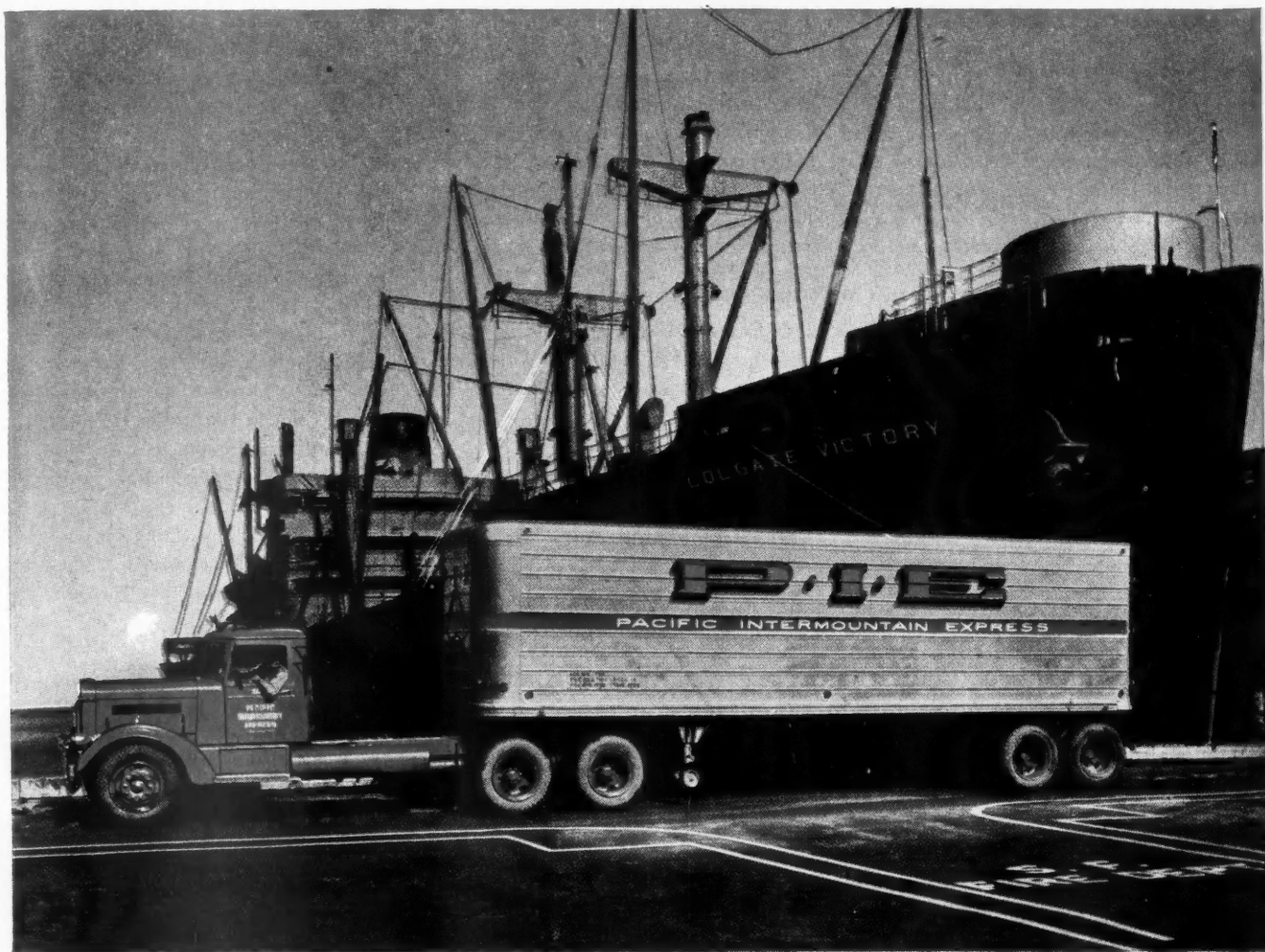
Stainless Steel Tanker



Capitol Dairy uses this 3500-gal. stainless steel tanker for daily runs between Teagarden, Ind., and Chicago. It is so perfectly insulated that company claims load will rise only one deg. in three days. Tractor by White, tank trailer by Hendrickson

● WHO IS IT?

ANSWER . . . (To Question on P. 130)
Charles L. McCuen, who had been vice-president of the engineering staff, is the new general manager of the research laboratories at General Motors. (Another Cartoon Quiz is on P. 138)



From the Mountains to the Prairie and the Sea It's Lightweight Browns for P.I.E.

More pounds per payload means real money to the Pacific Intermountain Express Company on its long hauls from Los Angeles and San Francisco to St. Louis and Chicago. That's why Brown Aluminum Trailers are their choice for heavy hauling. Brown Trailers put the weight in freight instead of the trailers. Records show that they often carry as much as 20% more freight. Lightweight materials plus Brown's exclusive monocoque construction makes the difference. Every pound of structural material does a maximum amount of work.

A trailer is only as valuable as the revenue it produces. If less weight means extra payload for you — it will pay you to investigate Brown Aluminum Trailers. See the Brown representative in your area for complete information or write us.

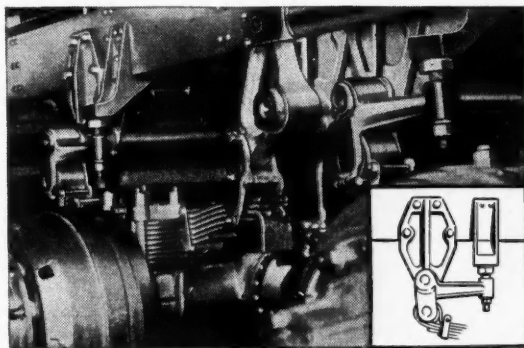


The Scale tells the Tale... Light weight means more Freight

Sales and Service in: SEATTLE, SPOKANE, LOS ANGELES, SAN FRANCISCO, DENVER, MINNEAPOLIS, KANSAS CITY.

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products



Brown's exclusive Axle Adjusting Knee permits easy alignment of axles to eliminate drag and excessive tire wear.

Brown

ALUMINUM TRAILERS

Brown Industries
Spokane 1, Washington

Temperature Control

(CONTINUED FROM PAGE 57)

freon unit and rotary-type compressor; mounted with L-type plates to the right front of the engine head and held securely by the third and fourth head bolts, and plates on the manifold. The compressor also is held in place by a mounting held by the front head bolt. This mounting-arm is adjustable, and the compressor thus may be detached (while still held

in place) during winter weather when air cooling is not needed.

The condensing coil for the unit has been mounted in front of the radiator in the area between the front body panelling and the radiator supports. Copper tubing connects the compressor and the condenser, and thence lead to a position back of the driver's seat.

Here is mounted the cooling coil and fins, and the circulating fans. This installation takes up roughly 6 to 8 cu. ft. The large four-bladed

fan is mounted atop the cooling coil and fins. Air is thus drawn in at the fan, circulated by vents downward over the coil, and expelled at the floor of the truck.

The driver may turn the fan on or off independently of all other controls, although that is not necessary very often. In very low winter temperatures, the fan helps circulation of heat inside the truck. There may be other times when the driver is called on to switch the fan on and off. Generally, however, he simply leaves it on, as the thermostatic control is then more complete.

The operation of this equipment with the vehicle's electrical system required two important revisions of the material. One was to rewind the electric fan motor from its original 110-volt specifications to a 6- to 8-volt power requirement, enabling it to use the truck battery. The other revision of equipment was to rewind the solenoid of the unit's thermostatic control for low voltage operation. The truck was equipped with a special heavy-duty battery.

The thermostatic control, which controls the internal temperature of the truck and regulates the compressor, is mounted alongside the circulating fan, just back of the driver's seat. It is set to keep the inside truck temperature at 50 deg. F.

Air Heated in Winter

DURING the winter months the air cooling system is generally not in use. A gasoline heater is installed at the floor of the truck to the driver's right, and this is put into service when necessary to bring the inside truck temperature up to 50 deg., the ideal at which to deliver flowers.

Special display racks have been built inside the truck, and the steel panelling has been cut away on each side to the rear of the doors. The panels have been replaced with large glass windows, and thus the flowers also are given the benefit of display while being delivered.

The vehicle illustrated, in prime coat, delivered for \$1,705.38. The additional painting (light blue with silver lettering), remodeling of the side panels, installation of the air-cooling equipment, and additional accessories cost about \$1,100.

END

(Please resume your reading on P. 58)

ADAPTORS • OTC BOX WRENCHES • OTC PILOT BEARING PULLER • OTC THREAD CHASERS • OTC HUB PULLERS • OTC SLEEVE PULLERS • OTC SOCKETS AND HANDLES • OTC OPEN END WRENCHES • OTC PUNCHES • OTC RING PULLERS • OTC DIFFICULT JOBS • OTC CUTTING TOOLS • OTC CHAIN WRENCHES • OTC 3-ARM PULLERS • OTC PUSH-PULLERS • OTC MASTER TOOL WRENCH

New OTC NO. PA-19

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A COMPACT UNIVERSAL PULLING SYSTEM—

PULLS and INSTALLS BEARINGS, RACES, PINIONS, SHAFTS, GEARS, SPROCKETS, WHEELS, PULLEYS, and other tight parts—QUICKLY, SAFELY

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***That's why Steel-Vents work...
and give two to three times the efficient life
of conventional rings IN REBORES***

Normally, when engines are ready for a rebore, the water jackets are coated with lime and scale. This insulation retards heat flow to the cooling water . . . cylinder bores are hotter and more distorted than in a new engine. To offset such conditions, more cylinder wall lubrication is an absolute necessity.

Because of their phenomenal oil carrying ability, Steel-Vents easily provide this added lubrication. They deliver a generous amount of oil to the walls—*all the way up*. That's one of the reasons why they give two to three times the efficient life of conventional rings. Then too, Steel-Vents never clog up. They keep on functioning at top efficiency, long after conventional rings are clogged or worn out.

Steel-Vent's exceptionally long life has been proven by service in thousands and thousands of rebored engines. Think this over before you put conventional rings in that next rebore job.


HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN

Hastings Ltd., Toronto



Write for your copy
of "Successful Reboring"

TOUGH BUT OH SO GENTLE



HASTINGS

STEEL-VENT PISTON RINGS

**Generous Wall Lubrication
Always Under Control**

GMC Gasoline . . .

(CONTINUED FROM PAGE 72)

released shortly, incorporating all of the mechanical improvements described below.

Three standard GMC valve-in-head engines, greatly improved for post-war application are used in this line. These are: the 228, 248, and 270, a larger displacement engine replacing the previous powerplant on some of the models as noted.

The FC-100 Series 1/2-ton and FC-150 Series 3/4-ton models with 4600 lb. and 5800 lb. rated g.v.w. respectively use the 228 cu. in. engine, longer front springs, and steering gear ratio increased from the previous 19.8 to 1 to 26.2 to 1. On FC-150, full floating rear axles having a ratio of 4.57 to 1 replace the former semi-floating type.

On the FC-250 Series, g.v.w. has been upped from 7000 to 8800 lb. This group uses the 228 cu. in. engine, 45 x 2-in. front springs, and

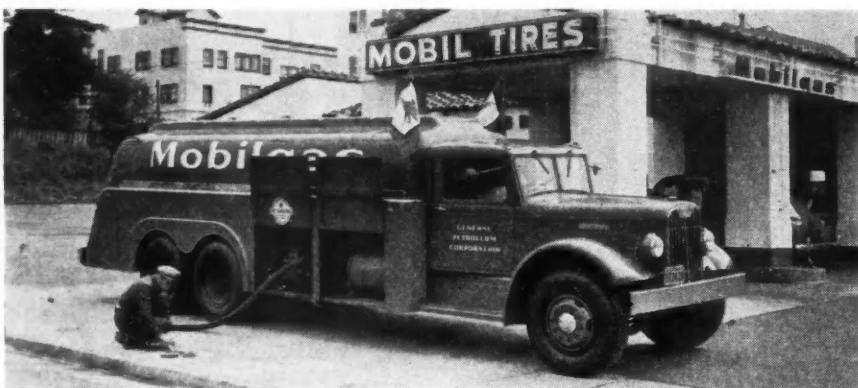
front brakes upped to 12 x 2 in. The heavier front axle carries a rating of 3500 lb., contrasted with the former rating of 2000 lb. Steering gear ratio is upped to 26.2 to 1. Rear springs are an inch longer and are of progressive type. A new 1 1/2-ton, four-speed transmission is installed. These models are fitted with hypoid rear axles having a ratio of 5.14 to 1 and have banjo type housings. Standard wheels are 17 in.; 18-in. wheels are optional.

A new model—the FC-280, replaces the former 300 and carries a g.v.w. rating of 11,000 lb. This model is equipped with the 228 cu. in. engine, has a front axle rating of 3500 lb., steering gear ratio of 27.7 to 1. It comes with a four-speed transmission and a hypoid rear axle of 5.43 or 6.17 to 1 ratio with a load rating of 9000 lb.

The FC-300 Series is rated 13,000 lb. g.v.w. and is fitted with the 248 cu. in. engine, replacing the 228 formerly used. Front springs are 45 x 2 in., steering gear ratio is upped to 27.7 to 1. The rear axle track is 2 in. wider, and auxiliary rear springs are standard. The hypoid rear axle with a ratio of 5.43 or 6.17 to 1 has larger wheel bearings and axle tubes. The two-speed axle is optional.

The FC-350 Series with 15,000 lb. g.v.w. rating has the 248 cu. in. engine, replacing the former 236. The front axle track is increased almost 2 in., the rear track being increased 3 in. to allow greater clearance for

(TURN TO PAGE 140, PLEASE)



MAXIMUM SAFETY IN DELIVERING GASOLINE



A petroleum tank truck equipped with S. & J. Internal Hydraulic Safety Valves is a safe truck, both on city streets and highways, and safe when unloading at a filling station. The hydraulic valves located inside each truck tank compartment protect the load in the event of collision or overturning which might break discharge lines. Fusible plugs inserted into the hydraulic line at strategic points release the hydraulic pressure and automatically close the valves in the event of fire during an unloading operation. The system is not new. It has been used by petroleum marketers, large and small, for many years. Would you like to know more about it?

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NEW YORK

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HOUSTON

LOS ANGELES

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SHAND & JURS

HOW DID IT START?



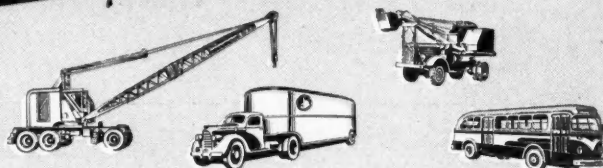
THIS COMPANY WAS MAKING SEWING MACHINES BEFORE IT STARTED MAKING AUTOMOBILES AND TRUCKS --

☐ DODGE ☐ WHITE
☐ DIAMOND T ☐ MACK

Answer on P. 140

9 GOOD REASONS

for using **VICKERS** Hydraulic POWER STEERING



1 FINGER-TIP STEERING Finger pressure steers the heaviest vehicle equipped with Vickers Hydraulic Steering. Short, quick, effortless turns ease the job of parking, backing, loading and maneuvering in city traffic. On the open road there is no lag or road wander.

2 HEAVIER FRONT WHEEL LOADING Many steering difficulties resulting from heavy front wheel loading are overcome by Vickers Hydraulic Power Steering. It provides light, easy steering with heaviest front wheel loading.

3 LOWER STEERING RATIOS Present high steering ratios can be lowered substantially with Vickers Hydraulic Power Steering.

4 LESS DRIVER FATIGUE The Vickers Hydraulic Power Steering Unit takes all the steering strain—the driver has none. Anxiety about unsafe tires and hazardous road conditions is relieved.

5 LIGHTER CONSTRUCTION An over-all weight reduction can be made in the construction of steering gears, housings and columns since all stress and shock are borne by the booster unit and vehicle frame.

6 GREATER SAFETY Blowouts, soft shoulders, ruts, cross winds, road obstructions or sudden stops—none affect steering. In event of engine failure or damage to the hydraulic system, steering automatically reverts to direct mechanical action.

7 SHOCKLESS On the road or off the road, the driver feels no road shock or wheel fight.

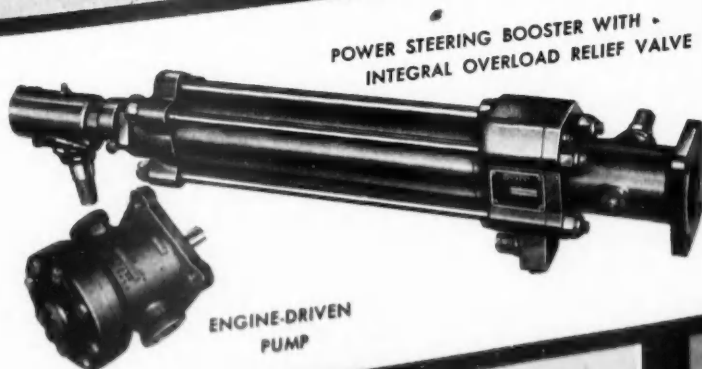
8 LOWER COST Simplified installation and lowered manufacturing costs due to increased production make the price per unit lower now than ever before.

9 ADAPTABLE Only minor alterations needed to apply Vickers Hydraulic Power Steering to new or existing vehicle designs.

Vickers Hydraulic Power Steering has been in successful use for more than 16 years. The redesigned unit with integral relief valve has had more than a year of testing on heavy buses and trucks under most severe operating conditions.

Write for Bulletin 47-30 for full information.

3170



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ENGINEERS AND BUILDERS OF OIL HYDRAULIC
EQUIPMENT SINCE 1931

GMC Gasoline . . .

(CONTINUED FROM PAGE 138)

larger tires and chains. The front axle has been stepped up in capacity to 4500 lb. Front springs are heavier and increased to 45 x 2 in. Steering ratio is 27.7 to 1. The hypoid rear axle of 6.17 to 1 ratio has been upped in strength by the use of larger wheel bearings and axle tubes with capacity of 12,500 lb. The two-speed axle is optional.

The FC-400 Series with 17,000 lb. g.v.w. rating has the 248 cu. in. engine and features a pressure cooling system. Rating of the front axle has been stepped up to 5000 lb. while that of the rear axle is upped to 14,000 lb. The two-speed axle is optional. Front springs are 45 x 2 in. and more than 1/2 in. thicker, while rear springs are 6 in. longer and 1/2 in. wider. Front brakes are now 15 x 2 1/4 in., while the rear have been increased to 16 1/4 x 3 1/2 in. Steering gear ratio is 28.1 to 1. A five-speed

transmission is standard with either direct or overdrive in fifth.

The FC-450 Series rated 18,000 lb. g.v.w. is equipped with the 270 cu. in. engine replacing the former 248, and is provided with a pressure cooling system. Clutch size is increased from 10 3/4 to 11 1/2 in. The heavier front axle is rated 5000 lb. while the rear axle rating is 14,000 lb. The two-speed axle is optional. Front springs are 45 x 2; front brakes are increased from 14 x 2 to 15 x 2 1/4 in. Steering gear ratio is upped to 28.1 to 1. This group has a five-speed transmission as standard.

Another addition to the line—the FC-470 Series—is rated 20,000 lb. g.v.w. and is powered by the 270 cu. in. engine with a pressure cooling system. Front axle rating is 5000 lb., rear axle at 17,000 lb., the size formerly used on the AC-550. Two-speed or double-reduction axles are optional. Front springs are 45 x 2 in., front brakes 15 x 2 1/4 in. Steering gear ratio is 28.1 to 1. This group is equipped with the standard five-speed transmission with either direct or overdrive in fifth.

Common Features

AMONG the features of general interest common to all models are the following: heavier frames equal in strength and rigidity to prewar frames with fish plates; clutch and brake pedals are fitted on the frame in a more rigid mounting to reduce vibration and make them readily accessible for servicing; clutch pedal linkage is improved to reduce pedal pressure, making release pressure on the larger models no greater than on light models. The steering column also is frame-mounted for greater rigidity and easier servicing. Radiators are mounted and stabilized on a large, single rubber mount at the center, making them free from the effects of frame twist. Molded rubber strips attached to the radiator frame

(TURN TO PAGE 142, PLEASE)

● HOW DID IT START?

ANSWER . . . (To Question on P. 138)

The White Sewing Machine Co. was the grandfather of the present day White Motor Co.

(Another Cartoon Quiz is on P. 142)



NEW HYGRADE "LIFE-OF-THE-PUMP" MONOFLEX DIAPHRAGM

YES, as Tommy Tuneup says: "Some Diaphragm!" So tough it actually outlasts the link and rocker arms! Think of that! When you replace an old diaphragm with the new revolutionary Hygrade "Monoflex" you give your customer a "life-of-the-pump" diaphragm. And at no extra cost!

Made from Nylon base, single layer, vulcanized with a synthetic substance. Retains flexibility at all temperatures; won't stretch, insuring uniform pressure throughout life of pump. Not affected by grease, gasoline, atmosphere or other agents that shorten the life of conventional types.

Monoflex Diaphragms will be furnished with all Hygrade Kits and Fuel Pumps.

From your jobber
HYGRADE PRODUCTS CO., INC.
 35-35 Thirty-Fifth St. • Long Island City 1, N. Y.



FUEL PUMPS
KITS AND PARTS

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ALL HYGRADE PRODUCTS

ASSEMBLYS FOR EVERY NEED

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REPLACEMENT PARTS



• ENGINEERED FOR OLD UNITS •



WHEN IT'S A QUESTION OF PISTON RINGS, you're right every time when you install American Hammered! For any model of any make of engine, you'll find the one set-up that is just right for that job among the hundreds of American Hammered combinations—specifically engineered for the replacement field, for every engine condition. Remember! Those to whom engine performance is the measure of piston ring value rely on Koppers American Hammered piston rings. Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.



American Hammered Piston Rings

GMC Gasoline . . .

(CONTINUED FROM PAGE 140)

prevent recirculation of hot air and tend to reduce radiator core vibration. Metal baffle plates have been eliminated while bolts replace sheet metal screws in the assembly.

Radiators have been improved further by using larger cores together with large inlet and outlet water connections to eliminate excessive water pressure in the block. The new radi-

ators are fitted with an overflow tank built into the top. The pressurized cooling system mentioned on the models 400 through 470 is available as optional equipment on the lighter models, the system being held at 4 pounds. A safety valve located in the secondary tank protects the system against excessive pressure.

Engine Developments

THE IMPROVED 228, 248, and 270 engines used in the new line remain the same in specification

detail but incorporate many new features developed progressively in recent years. Among these are the following: toco-hardened crankshafts, two-piece exhaust valve inserts, positive crankcase ventilation, water bypass in cooling system, moraine sintered bearings, deep sump-type oil pans in Model 300 and up, one-pint oil-bath air-cleaners standard in models 300 and up.

For greater accessibility the battery is mounted outside the frame under the floor boards. A spare tire carrier is standard on all models.

Power shift is standard on all two-speed axles and dual performance axles. It is operated by vacuum with hydraulic brakes and by air when air brakes are specified. With vacuum brakes a reserve tank is provided to assure an easy shift. New vacuum connections of screw-fitted type, replace the former slip fit hose connections.

Driver Comfort

FOR DRIVER comfort, GMC offers a line of new cabs, longer and wider both at the cowl and across the seat, with 2 in. added to windshield height for better visibility. For wet weather driving there is provision for a sealed, water-proofed windshield and installation of the two wipers at the bottom. Cowl ventilators located on the top and side make summer and winter driving more comfortable. In addition, louvered openings on the right side of the cowl are designed for the at-

(TURN TO PAGE 144, PLEASE)



WITH *Johnson*

ADJUSTABLE TAPPETS

for FORD V-8's and MERCURYS (85-100 H. P.)

You can't go wrong when you install **JOHNSON** Adjustable Tappets for Fords! You make more profit and gain more satisfied customers.

Designed and produced by "Tappet Specialists," suppliers of tappets of all kinds to America's leading engine builders, these tappets are easily and quickly adjusted without fitting of valves — with cylinder heads in place. Special spanners, included with each set of tappets, leave both hands free for quicker, yet more accurate adjustments, and the **JOHNSON** self-locking screw maintains this exact setting for many miles of smooth, quiet, full powered engine performance.

CALL YOUR N.A.P.A. JOBBER TODAY

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MUSKEGON, MICHIGAN

"Tappets Are Our Business"



WHAT FAMOUS GENERAL PAID THIS TRIBUTE TO TRUCKS — THE TRUCK IS OUR MOST VALUABLE WEAPON.

- ☐ GEN. GEO. C. MARSHALL
- ☐ GEN. DOUGLAS MACARTHUR
- ☐ GEN. DWIGHT EISENHOWER
- ☐ GEN. GEORGE S. PATTON

Answer on P. 146



Spicer

**UNIVERSAL
JOINTS**

*Standard
of the
Industry*

43 YEARS OF
Spicer
SERVICE

SPICER MANUFACTURING DIVISION OF DANA CORPORATION • TOLEDO 1, OHIO

JULY, 1947

Use postage-paid card inserted at page 61 for free information on advertised products

143

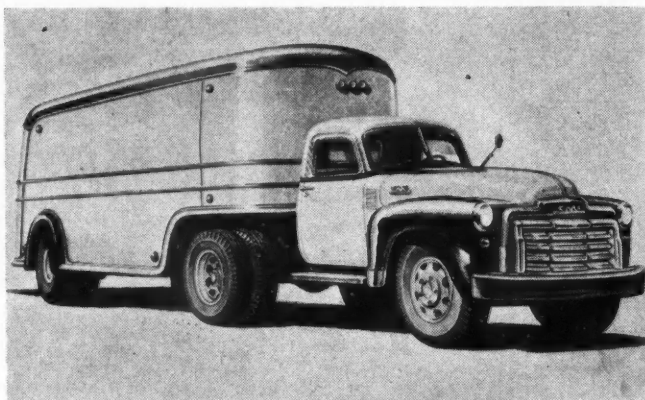
GMC Gasoline . . .

(CONTINUED FROM PAGE 142)

tachment of a fresh air heater. The cowl ventilator screen is standard. For increased comfort the dash is completely insulated and sound-proofed even around clutch and brake pedal openings.

A better ride for the driver is afforded by the longer and softer front springs together with improved seat cushions. The cushions have about twice the number of seat

Special tractor series, available in several models, have 72 in. CA dimension and 149 in. wheelbase



The engines of modern motor cars build up extremely high compressions. Consequently they require unusually strong, tight-fitting cylinder head fasteners.

Because of their high tensile strength and accurate, sharp, precision-fit threads, Lamson & Sessions S.A.E. "1035" Double Heat Treated Cap Screws are used by many leading car manufacturers for cylinder head fasteners as well as other applications.

Extensive technical research by these large companies has proven that Lamson & Sessions Cap Screws are *best* for original equipment. This is the tip-off for smart automotive repair men to use Lamson products for all engine rebuilding jobs.

THE LAMSON & SESSIONS CO., 1971 West 85th Street, Cleveland 2, O.

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

AUTOMOTIVE FASTENERS
LAMSON & SESSIONS

Ask your distributor for the Lamson Line

springs each fitted in a burlap bag. Seats are trimmed with rubberized hair pads with a maroon imitation leather covering.

Cabs now have a three-point mounting and, in addition, have rubber stabilizers mounted on the rear of each side of the cab to prevent direct contact between the cab and frame. This frees the cab of the effects of frame weave.

A deluxe cab, available as an option on the Series 100 through 350, has all of the features of the standard cab plus the addition of rear quarter windows and bright metal windshield frame and door reveal moldings. The same cab is standard equipment on the Series 400 through 470 and offers two additional improvements; a sponge rubber seat pad in place of the rubberized hair pad; and a heavier brown imitation leather covering for the seat and back.

The new grilles are made of heavier stock and instead of fastening to the sheet metal as is conventional practice they are mounted rigidly to the frame by means of two sturdy braces. Thus they combine eye-appeal with the function of an additional high bumper.

On Series FC-300 to FC-470, the wheelbase has a 72-in. CA dimension recommended for tractor use.

All series have hydraulic brakes. Vacuum power operation is standard on Series FC-300 to FC-470, optional on the FC-280.

END

(Please resume your reading on P. 73)

. . . ROBERT A. OLEN, general manager of The Four Wheel Drive Auto Co., who has been elected to the board of directors





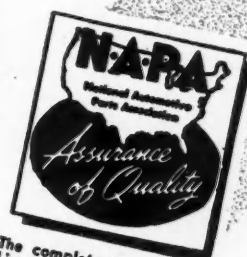
You'll sense—instantly—a sure "feel" of lightweight power and bulk-free balance the moment you pick up this new FLEX HANDLE! It's just one of the many redesigned members of this famous Line that has consistently brought you—Mechanics Hand Tools that Make Money.

Note the remarkably slim, new OVAL design... it's streamlined, yet strength has actually been *increased*... clumsy bulk of the old round shape has been scientifically eliminated and steel added in the direction of strain. The new oval grip, too, is beautifully designed to fit the hand more securely.

Stronger, slimmer—amazingly effective in the tough spots—that's the story on the whole New Britain Line today!

Excess material, top and bottom, in old round shape, did little or no work. Removing this surplus greatly reduces useless bulk. Slight reinforcement added to each side in new Oval design—in direction of push and pull—develops amazing new strength.

There's knuckle and job insurance in these really modern Tools of Greater Strength—Better Fit... ask your NAPA Jobber to show you the Line. The New Britain Machine Co., New Britain, Conn.



The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

New Britain

GREATER STRENGTH • BETTER FIT HAND TOOLS

Maintenance Clubs

(CONTINUED FROM PAGE 48)

agree not to use the meetings for sales promotion of any kind. Here the annual dues are \$10, which includes an excellent after-meeting light supper but no dinner. Membership has already reached 40 and is still on the way up.

Programing in the two organizations likewise reveals widely divergent approaches.

No Formal Speakers

AT THE New York meetings there is seldom a formal speaker, although an occasional outside expert is invited to present a particular subject. Normally, a few members, usually from two to four, are assigned topics in advance and act as discussion leaders at the meeting. On the occasion of our most recent visit the subject for the evening was "Preventive Maintenance as Applied to Fleet Operation." Sub-topics assigned to four members covered these par-

ticular phases of the subject: (1) Periods and extent of maintenance; (2) road failures vs. fuel consumption and cost as a measure of adequate PM; (3) day vs. night operation in the shop, and (4) PM records.

Complete freedom of speech is a cardinal principal of the New York club's operation and holds not only for the discussion leader but for all membership. Thus the leader feels completely free to mention brand names and divulge operating details of his own operation, while other members are at liberty to interrupt with timely questions or supplementary comments as the topic develops. Good chairmanship is obviously a necessity for such meetings, and experience has paved the way for excellent work in this respect. Each of the four PM phases under discussion carried a time limit of 20 minutes and a summary period of approximately the same length was allowed at the end. It was the chairman's job not only to maintain the time schedule but to intercept the occasional tendency to stray too far afield from the subject at hand.

Subjects for the several preceding months covered these vital points:

1. Preparation and painting of commercial vehicles.
2. Fuel and lubrication: additives, dopes, reclaimed oil, etc.
3. Tires: recaps, synthetic tires, rim sizes, etc.
4. Truck Purchasing Practices: methods used to compare chassis of various makes and models; checking of performance ability, load distribution, etc.
5. Tune-up Procedure by Instrumentation versus Chassis-Dynamometer Tests.

Long experience has convinced the members that careful timing pays big dividends, not only with efficiency next day at the office, but with the "little woman's" attitude
(TURN TO PAGE 148, PLEASE)

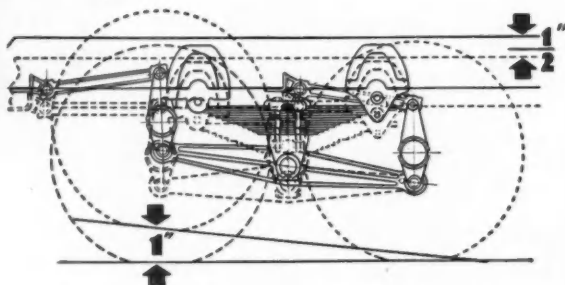
● WHO SAID IT?

ANSWER... (To Question on P. 142)

Old "blood and guts" himself, General George S. Patton, who led our forces at record breaking pace through Africa, France and Germany.

50%

LESS LOAD LIFT



Each wheel must be lifted over any road or street irregularity . . . power required = height of projection x load weight. The Equalizing Beam acts as a lever operating upon the fulcrum of the opposite wheel, which is still on level ground—resulting in a saving of power with obvious saving in fuel costs.

Hendrickson design centers the load weight between the tandem axles; the Equalizing Beam reduces the load lift 50%—giving additional saving in power required.



HENDRICKSON MOTOR TRUCK COMPANY
Wabash Avenue at 36th Street
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"Follow the Leader"

any way you look at it...

you make **MORE MONEY**
...WITH A **BEAR** BALANCER

GETS THE WHEEL OFF!

NEW ELECTRICAL PICK-UP
and PROPER WHEEL POSI-
TION *off-the-car*; plus
MORE POWER to really
rev' it up at all speeds
means Bear ACCURACY
wins repeat customers!

EASIER
QUICKER

GETS THE WHEEL OFF!

EASIER WORKING POSITION; *plus*
greater confidence in work; *plus*
no worry about whether car con-
ditions are affecting wheel balance;
plus easier to operate and less apt
to get out of order; these give
Bear the mechanic's verdict.



EXTRA PROFITS because Bear gets the
wheel off, the proven best way to sell
MORE BRAKE SERVICE, STEERING PARTS
and SHOCK ABSORBERS; EXTRA PROFITS
because unchallenged is the
Business Building Power
of the Bear Sign backed
by National
Advertising.

PLUS
SALES

GETS THE WHEEL OFF!

Again! OFFICIAL AT 500 MILE RACE!

Year after year, Bear Dy-Namic Balancing
is the recognized official service at Indian-
apolis Speedway—used and
PREFERRED by RACING MEN



No FLASH IN PAN is Bear's performance on track or highway—years of
leadership have **PROVEN** beyond doubt—that the way to balance
accurately and most profitably is OFF the car!



SEND me
the complete
wheel balancing
picture

MY NAME AND ADDRESS IS:

BEAR MFG. CO. DEPT. C-3,
ROCK ISLAND, ILL.

BEAR

Dy-Namic

WHEEL BALANCERS

Year after year, MORE BUY BEAR THAN ALL OTHERS COMBINED!

Use postage-paid card inserted at page 61 for free information on advertised products

Maintenance Clubs

(CONTINUED FROM PAGE 146)

back home. The dinner gets under way promptly at 6:30, and the meeting, usually around the same table, begins at 8. With approximately two hours of discussion at each meeting, that means that members are on the way home at 10. They believe firmly that the meeting is enjoyable, worthwhile business enterprise, and that it is not necessary to drag it out

by social activities, with the exception of an annual party (at extra cost) to which wives are invited.

Instructive Program

CONTRARY-WISE and not at all in a critical light, because it is our firm belief that organizations of this kind must be adapted to fit the individual needs, the Buffalo group operates on an entirely different plan. Here the meetings begin at 8 P.M. in a large room set aside for the occasion by a local section of the

Veterans of Foreign Wars. Invitations are sent out by various business organizations whose key men are members, and are extended to all personnel of members' shops. The result, on the night we attended, was a turnout of some 120 men, or an average of two visitors for each club member.

The programs are formal and on each occasion good speakers have been obtained. On the night we were present, John W. Cochran of Bendix-Westinghouse Air Brake Co. presented his company's newest sound movie on air brake operation. It is, for the benefit of all concerned, one of the best industrial movies we have seen, and was backed up by an excellent, short talk on the same subject. As might be expected, the discussion which followed was somewhat limited, but there was a definite feeling on the part of all who attended that they knew a lot more about the operation and maintenance of air brakes than they had known before the meeting got under way.

On preceding monthly meetings some of the subjects comprised: wide base rims, Eaton 2-speed axles, 10-mm. spark plugs and frame chassis and wheel alignment presented by a representative of the Bear Mfg. Company.

After each meeting beer and cold cuts are on the house, and we noted a reluctance on the part of members and guests to leave the congenial atmosphere. At least, at the start, directors feel that the advantages of the social get-together are sufficiently strong to merit its continuance.

Other Fellow's Experience

NOW JUST what do members get out of the associations? Again the answer is widely divergent. In New York, remembering that membership is made up exclusively of top-flight fleet maintenance men, experience has shown that the primary benefit is finding out how the "other fellow" has solved a particular problem, or what experience he has had with a specific new product. Examples of both were present on the night we attended. One of the sub-topics referred to above was "day vs. night operation in the shop." Heated discussion immediately en-

(TURN TO PAGE 150, PLEASE)



PREPARED TO TAKE PUNISHMENT

To stand the punishment of high-speed, heavy-duty, rough-road trucking, your springs will have to be *mighty* tough. That's why perfected Maremont springs so consistently fill your most exacting bill.

Many, many years of research and experimentation stand behind the spring that bears the Maremont name. The design . . . the select alloy steel . . . the fool-proof heat-treating . . . the rigorous pre-testing . . . *these are but a FEW* of the features which make the Maremont spring so resilient . . . so durable . . . and so perfectly prepared to take the punishment of fast, modern truck operation!

See Your Nearest Maremont Jobber or Spring Service Station for Springs, Helper Springs, Axle U-Bolts, etc.
Ask for Latest Spring Catalog 9720T.

ALSO MANUFACTURERS OF MAREMONT MUFFLERS AND PIPES

SINCE
1877

MAREMONT SPRINGS

MAREMONT AUTOMOTIVE PRODUCTS, INC.
1600 S. Ashland Ave. Chicago 6, Ill.
Factories at Chicago, Gary and Harvey, Ill.



"Why don't I keep my big mouth shut?"



I WAS FEELING my dog biscuit when I started touring the American Brakeblok plant. So when I saw a girl working at a big machine, I opened my big mouth . . . and put my paw in it.

"Now what can a girl know about a machine like that?" I woofed. And that's where I made a mistake!

She looked at me and said, "Listen, Stopper, if you can bark so big, suppose *you* tell me what it's all about."

Well, I didn't know what to say and had to admit it. "O.K. you win," I yipped. "Tell me what it is."

And so she told me. The machine was a multiple-spindle drill press and she knew more about it than I know about bones. Believe it or not, it drilled and countersunk 16 precision holes at a crack!

Machines like that are nothing unusual at American Brakeblok.



Wherever possible, special machinery does the job. Production is stepped-up—unfailing quality is certain. It's all part of American Brakeblok's policy of giving you *the best brake lining that can be made*—in quantity and economically!

If you are in the brake service business or run a heavy-duty fleet, this policy means dollars in your pocket. Your customers will really approve when you install this superior lining. In bus and truck operation, American Brakeblok gets the drivers' votes for sure, safe stops. Maintenance men know it delivers more miles of dependable operation.

Next time you order brake lining, specify American Brakeblok . . . available in the correct size and with correct frictional properties for all passenger cars, trucks and buses.



Distribution through 39 NAPA Warehouses



AMERICAN
Brake Shoe
COMPANY

AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN



Maintenance Clubs

(CONTINUED FROM PAGE 148)

sued with regard to the relative efficiency of shop personnel at various ends of the 24-hour clock. Some who had believed that the efficiency of daytime operation outweighed the added cost of keeping sufficient spare vehicles to permit day operation only, went home with the firm conviction that they should reweigh these cost advantages in the light of

testimony offered at the "round table." A large operator of diesel buses gave first-hand information concerning the operation of a new-type oil-burning heater which warmed engine cooling systems as well as vehicle interiors. From this development a new light was thrown on the timeless controversy of outside vs. inside storage of vehicles in cold climates.

The number two advantage of the New York group, cited informally by many of the participants, was the

intimate association with other operators which the club afforded. When a salesman presents a world-shattering new item of truck equipment or when a certain part appears completely unattainable, members find themselves reaching for the phone. The ensuing conversation starts out something like this: "Bill, what was your experience with that new-type fan offered by the XYZ company?" or, "Joe, we're stuck for a set of rod bearings for K-5 International. Didn't you say you knew of a shop that had five sets?" Again, experience has shown that not once has this valuable interchange of information been abused.

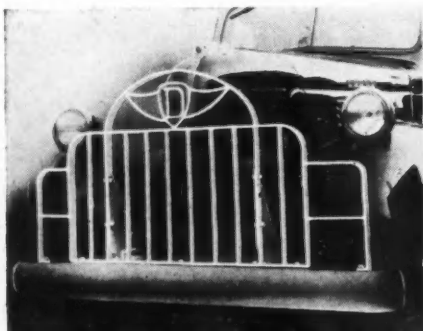
Educational Value

BACK to the Buffalo group, we find that both these fundamental advantages still hold, although up to now both have been outweighed by the purely educational value of the meetings. With younger, ambitious shop personnel attending along with their member sponsors, it is felt that here the primary advantage has been in actually increasing the everyday working knowledge of all who attend. As mentioned previously, no one could have left the meeting the night we were present without an intimate working knowledge of the Bendix-Westinghouse brake system. Not only did they see and hear the subject excellently presented, but under each arm they took home a 256-page shop manual replete with working diagrams and exploded views, gladly offered by the sponsors of the program. The same thing had happened at the previous meeting on the subject of Eaton 2-speed axles, and at other meetings before that.

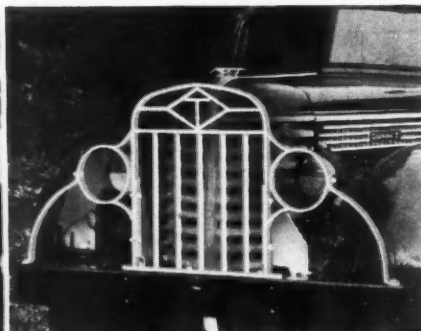
Some of the sponsors of the Buffalo group, men whose occupation is on a regional rather than a local basis, are currently organizing a similar group at Rochester. Only a few months ago (CCJ, April, pg. 129) we reported some details of a similar group now operating in the greater Boston area. This one, unlike the ones discussed here, is sponsored by the Massachusetts Safety Council and embraces "supervision, maintenance and safety in commercial vehicle operation." But the ultimate advantage is the same.

END

(Please resume your reading on P. 49)



• DODGE List Price 1/2 to 1 ton, \$34.00
List Price 1 1/2 to 2 tons, \$38.00



• DIAMOND T #201, 306, 404, 509, 614
List Price, \$38.00

Prices are F.O.B. N. Y. subject to 5% excise tax
Liberal discounts to Dealers and Fleet Owners.

"Better GRILLE GUARDS by BUSTIN"

All Grille Guards are especially designed to fit each individual model of 1946-1947 Trucks.

Bustin Grille Guards are making a name for themselves amongst truck owners everywhere. Sold from coast to coast.

See your dealer today.

Patent Pend. Designs

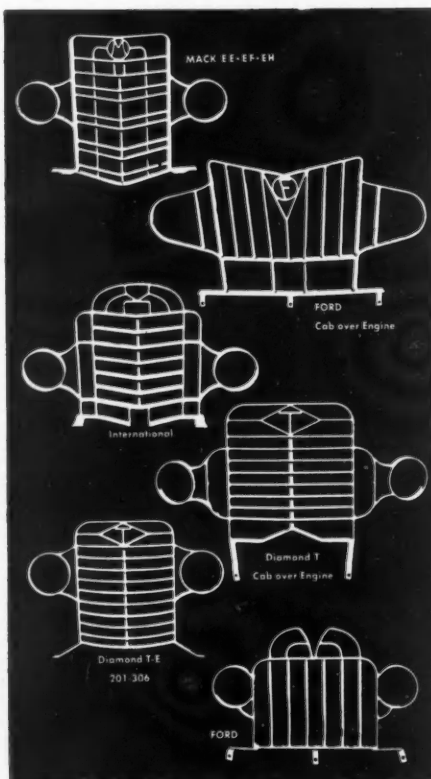
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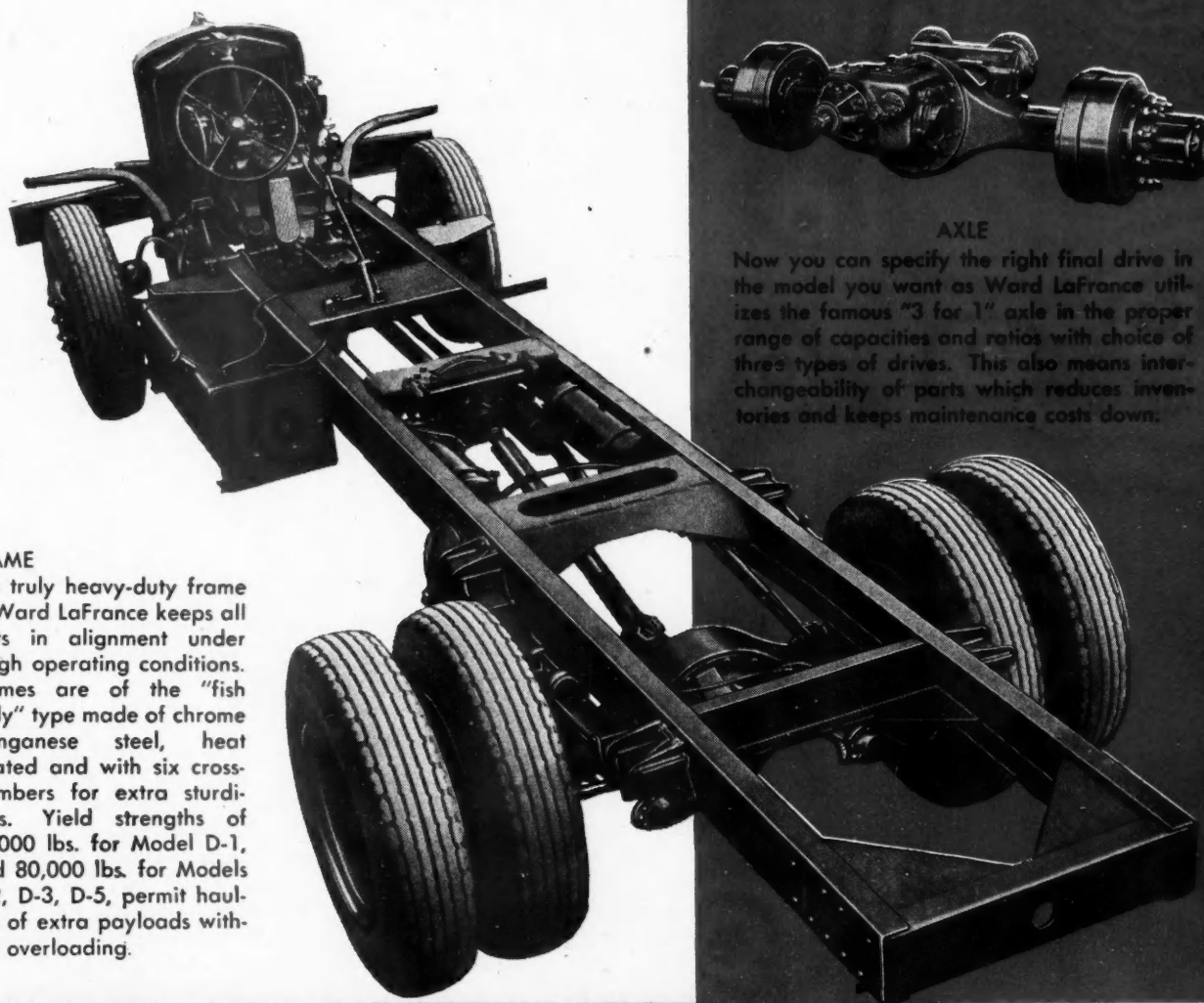
NEW YORK 35, N. Y.



Now with a WARD LA FRANCE *Fit your Truck to the Job!*

Differing job requirements call for different truck specifications — particularly in axles, transmissions and frames. The Ward LaFrance complete line of heavy-duty commercial trucks and truck-tractors offers a choice of models and sizes to fit your job.

See your Ward LaFrance distributor for the heavy-duty truck fitted to your job.



FRAME

The truly heavy-duty frame of Ward LaFrance keeps all units in alignment under rough operating conditions. Frames are of the "fish belly" type made of chrome manganese steel, heat treated and with six cross-members for extra sturdiness. Yield strengths of 60,000 lbs. for Model D-1, and 80,000 lbs. for Models D-2, D-3, D-5, permit hauling of extra payloads without overloading.



TRANSMISSION

Ward LaFrance heavy-duty transmission uses helical gears to prevent damage by faulty shifting. Short, quick shifts enable drivers to choose axle ratio at will without de-clutching and loss of headway. Sturdy construction throughout is assurance of stamina for the toughest going.




AXLE

Now you can specify the right final drive in the model you want as Ward LaFrance utilizes the famous "3 for 1" axle in the proper range of capacities and ratios with choice of three types of drives. This also means interchangeability of parts which reduces inventories and keeps maintenance costs down.

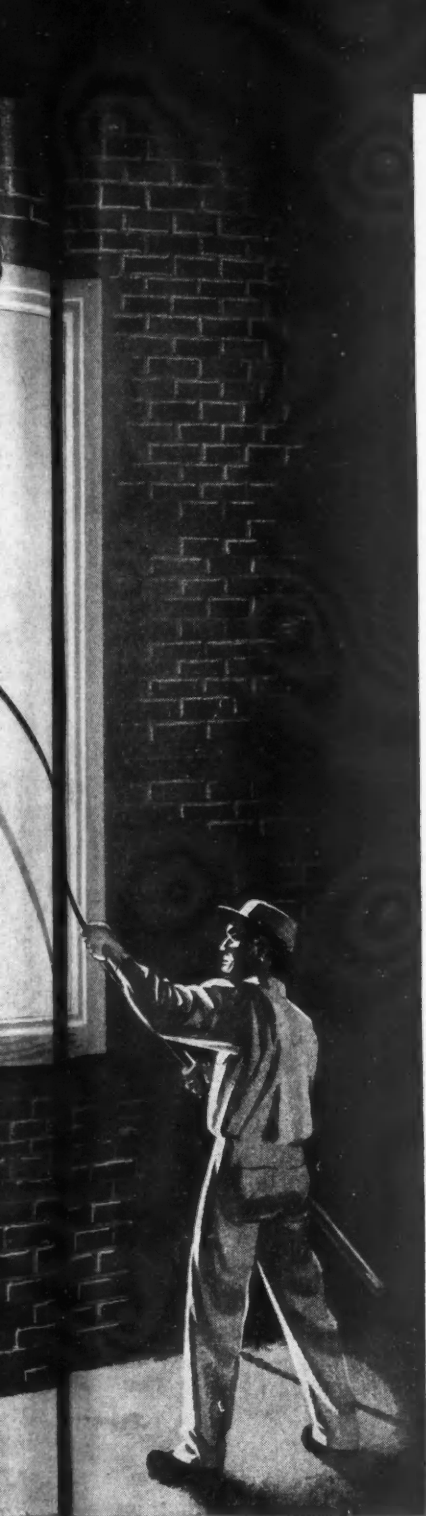
WARD LAFRANCE TRUCK DIVISION
Great American Industries, Inc.
ELMIRA, NEW YORK

Ward LaFrance motor trucks, and fire apparatus are produced under the American System of Free Enterprise that has made possible the finest products, highest wages and the best living standards ever known.



*Your NAPA Jobber
is a Good Man to Know!*

NATIONAL AUTOMOTIVE PARTS ASSOCIATION • DETROIT 1, MICHIGAN

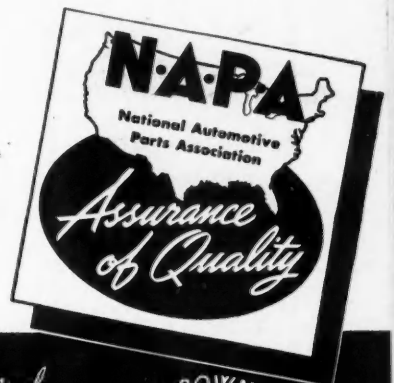


Well-Posted

Your NAPA Jobber is well posted on your parts needs and well-stocked to meet them. He is in position to save you phone calls, gasoline and time. Under one roof he has parts and supplies of genuine quality which cover the great majority of your requirements for cars and trucks of all makes. On parts only occasionally needed there is no waiting for "shipment from the factory." They are quickly available from a nearby NAPA Warehouse. You save your own time, and your customers' time, when you depend on your NAPA Jobber.

NAPA

is the largest Independent Parts Organization in the Industry!



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 PARTS FOR FORD
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 AND ALL POPULAR CARS
DITTMER
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PRECISION
 PISTON PINS
FEDERAL
 BALL BEARINGS
DUCKWORTH
 TIMING CHAINS
UNITED
 PARTS FOR
 HYDRAULIC BRAKES
 FUEL PUMPS

Shop Garage

(CONTINUED FROM PAGE 59)

doorway which incidentally is 20 ft. wide, 14 ft. high and is equipped with a power operated overhead door. The western extremity of the building is a one story section housing the locker room and main men's wash room on the south; a private office for the operating manager, general office, rest rooms and boiler room on the north. The 5000-gal. fuel oil tank is located

just outside beneath the parking lot.

Next to the boiler room is a completely walled-in separate "forge shop" equipped with fireproof doors and exhaust fan ventilator. Here is located a small blacksmith's forge, used primarily for heating small parts and spring leaves. Welding equipment is also stored in this room and used there whenever the size of the work permits.

On the south side just east of the locker room will be noted the ample provision for parts department. Since

original plan was completed, a partition has been inserted near the middle of this room to provide space for tire storage and repairs at the south end. Metal racks on either side of the room permit upright tire storage on two levels. A balcony over the entire area provides additional storage facilities.

60 x 39-Ft. Shop

THE THREE-BAY shop area next may be closed off from the rest of the garage to facilitate winter heating. It measures 60 x 39 ft. with sufficient space in each bay to accommodate two tractors or one of the longest of the fleet's trailers. The center bay is fitted with a pit 3 ft. wide and 24 ft. long which contains built-in lighting and adequate outlets for air and electricity. Under the floor at the south end of the pit is a 250-gal. drain oil storage tank which is filled by gravity and pumped out from the outside at periodic intervals.

A series of work benches are placed under the windows of the shop area with a continuous row of fluorescent lighting fixtures over them. Other lighting in both shop and storage areas is from standard incandescent fixtures.

Next to the shop area is a completely enclosed paint spray room, 39 x 19 1/3 ft. Although the shop and parts areas have no separate ceilings, the paint shop has both a plaster ceiling and a fireproof door. Directly at the center of the west wall is an air exhaust duct, approximately 2 x 4 ft. in dimension. It goes directly up and through the roof with a powerful exhaust fan built into the duct just under the roof line. This is a rather interesting departure from the usual end-mounted exhaust fan feeding out through the wall. It was felt that by using the center mounting, much more uniform air currents could be obtained.

Inside Gas Fill

The gasoline fill pipe and meter are located at the corner of the paint shop and readily accessible to vehicles coming in the south door. This inside location was particularly desired and is perhaps unique in modern Cleveland building annals.

END

(Please resume your reading on P. 60)



EberHARDWARE

SIDE DOOR CONTROL



No. 575720

BALL BEARING TYPE

FOR SOLID OR FOLDING DOORS

Eberhard

- HINGES
- LATCHES
- DOOR IRONS
- DOOR CONTROLS
- DOOR HOLDERS
- SEAT IRONS
- LOCK HANDLES
- SEAT PEDESTALS
- LOCKS**
- REFRIGERATOR
- PANEL DOOR
- VAN BODY
- SLIDING DOOR
- ROPE HOOKS
- LADDER HOLDERS
- ETC.

Smooth in action and quiet in operation.

Over-center locking action with no set screws required. The rod is adjustable 1/2 inch in length.

The handle has two pivot holes permitting a 1 inch variation in throw. Can be adjusted to either 4 inch or 3 inch center of hinge bolt to center of bolt rod.

Finishes are plain or chromium.

Side Door Controls, like every EberHARDWARE item, are "purpose-tested" and built for long life under the most severe conditions of usage.

A copy of the new Eberhard Catalog will be mailed to you upon request.

Fixed Escutcheon Lock Handle

No. 5653

Attractively designed to blend with present day streamlined bodies. Escutcheon permanently attached to handle. Can be mounted vertically or horizontally.



EBERHARD

TRUCK BODY FITTINGS

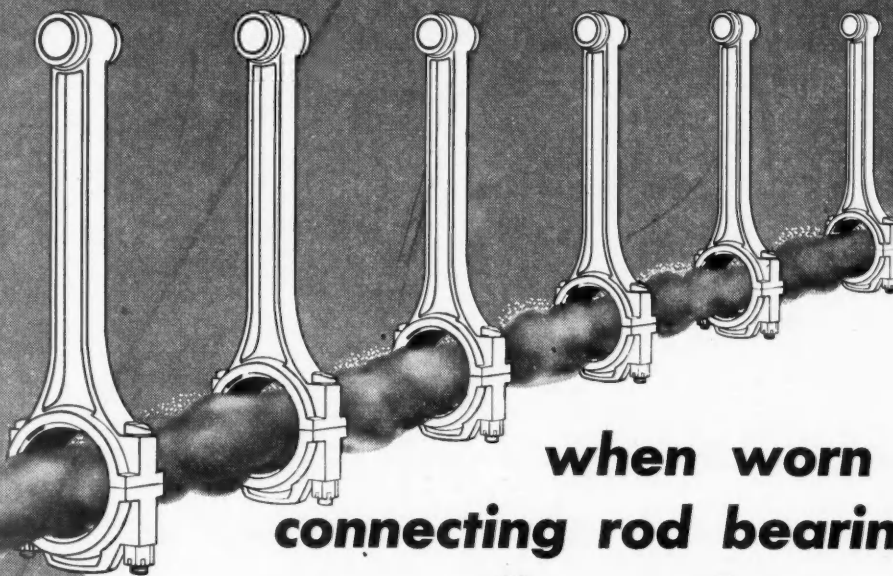
Long Run



EBERHARD MANUFACTURING CO.

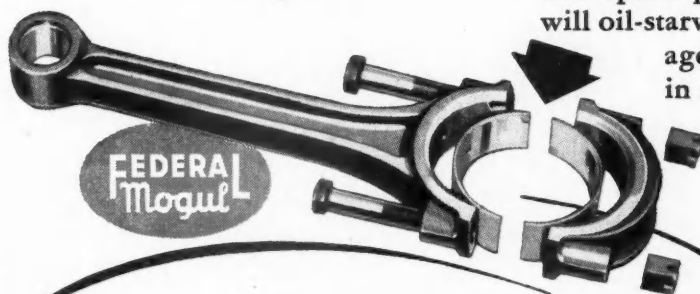
Division of the Eastern Malleable Iron Co. 2734 TENNYSON ROAD, CLEVELAND, OHIO

Performance goes up in smoke...



when worn connecting rod bearings cause oil pumping

Profits go up in smoky exhaust when worn bearings send fuel bills soaring, result in costly breakdowns. On every overhaul or at the first sign of smoky exhaust, check those bearings. When worn, they let excess oil reach combustion chambers, burn to fouling carbon on pistons, rings, valves and spark plugs. Just one badly worn bearing will oil-starve others, cause costly crankshaft damage. Check the bearings. If worn, replace in sets with genuine Federal-Mogul Oil-Control Bearings.



FEDERAL-MOGUL SERVICE
DIVISION OF FEDERAL-MOGUL CORPORATION
COLDWATER, MICHIGAN

Replace in Sets with Genuine
FEDERAL-MOGUL
Oil-Control Bearings

Dynamometer Tests

(CONTINUED FROM PAGE 39)

Experience has shown that the above results can be affected to a considerable extent by one or more of the following factors.

1. Quality of personnel, both shop and supervisory, which is reflected in the quality of maintenance in force.

2. Quality and completeness of maintenance records. Inadequate records

can lead to a false evaluation of the effectiveness of a chassis dynamometer as a maintenance tool.

3. Outside storage during winter months necessitating idling of engine has a very marked effect on fuel consumption, which must be considered when analyzing fuel economy data. This effect cannot be overcome by engine tune-up.

4. The level of carburetor maintenance is the greatest single factor effecting fuel economy.

5. General mechanical condition

of the engine must be considered in relation to its effect on the overall operation. Engines which have accumulated high mileages without overhaul cannot be expected to perform on a par with low mileage or rebuilt engines.

Testing Procedure

TEST COACHES were processed through their normal pit inspection before they were checked on the chassis dynamometer. The dynamometer inspection schedule set-up for this test required about one hour, which was about the same as required for the normal pit inspection. This dynamometer schedule was more detailed than that which might be required in the day to day service of a vehicle. The main items of this schedule were as follows:

1. With engine shut-off, cooling water and oil levels were checked and additions made as required.

2. Engine was started and operated in high gear at approximately $\frac{3}{4}$ full throttle at 25 to 30 m.p.h. Operation was continued until temperature equilibrium had been established.

3. During this warm-up period, the engine was checked for the following: water leaks, oil leaks, condition of belts and electrical wiring, oil pressure, radiator shutters and any unusual noises in engine or driveline. Major defects were reported to the garage foreman.

4. Ignition timing was checked at idle speed.

5. When temperature equilibrium had been established, full throttle runs were made at 20, 25 and 30 m.p.h. and the following data recorded on the performance record sheet.

- a. Engine speed.
- b. Vehicle speed.
- c. Rear wheel horsepower.
- d. Manifold vacuum.
- e. Air-fuel ratio.

f. Actual spark advance was observed and recorded for each cylinder (protractor scribed on flywheel at 120 deg. intervals).

- g. Knock intensity.
- h. Jacket water temperature.
- i. Cam angle.

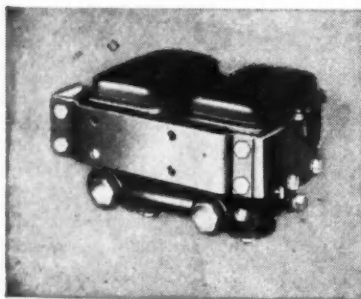
6. The same data listed above was obtained at speeds of 20, 25, and 30 m.p.h. with load adjusted to give manifold vacuum equal to 10 in. mer-

No Vapor-Lock! No Fuel Pump Failures with a



- Reduces operating costs . . . cuts expensive "lost time" due to fuel pump failures.
- Helps to maintain tough schedules—insures quick starting in any weather.
- Operates only when needed.

- Delivers a minimum of 15 gallons of gas per hour.
- Available for 6 or 12 volt installations.



110-P DUAL PUMP

Dual fuel pump installations are recommended where gasoline mileage is less than 5 or 6 miles per gallon. Each pump in a dual unit may be wired to a separate switch. By using one pump in a dual unit, 30% greater fuel delivery will result. The idle unit acts as a booster as well as reserve pump. Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

cury. This approximates the average road load operation as found by road testing.

7. All items needing attention as indicated by data obtained above were serviced and recorded along with any unit changes such as carburetor, fuel pump, distributor, etc.

8. Vehicle was operated at 25 m.p.h. full load and ignition timing adjusted to obtain the highest power out-put commensurate with permissible knock.

9. Basic setting of ignition timing was checked at idle speed.

General Conclusions

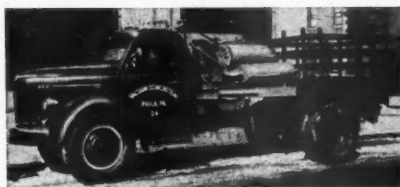
ANALYSIS of the experience after two years' work with the dynamometer led to the following observations:

1. A chassis dynamometer, or chassis dynamometers may be advantageously used in most maintenance shops.

2. It can be used as an inspection tool whereby each vehicle is passed over it at periodic intervals; or it can be used as a control inspection tool, whereby only a select group are checked at periodic intervals; from these results the level of inspection for the entire shop can be established. The method to be used depends entirely on the make up of the shop, the number of vehicles and the quality of the maintenance personnel.

3. Experience indicates that a group of coaches which have basic ignition timing adjusted to within close limits of a correctly established standard, give economy comparable to a group in which each unit is adjusted to its specific optimum by the use of the chassis dynamometer. However, the chassis dynamometer

Quick Concrete Set



Vacuum Concrete, Inc., Philadelphia, operates eight specially-equipped Model 22 Reos in connection with a patented process for removing air and water from freshly-poured concrete. The pumps, powered by a Davey split-shaft take-off, handle 1000 cu. ft. per min. at 67 per cent vacuum. Concrete hardens so fast, forms may be removed within 30 min.


can be used to an advantage for checking the operating advance characteristics of distributors as installed on their respective engines.

4. The dynamometer can be very useful as a trouble shooting tool, by readily uncovering defects not apparent on the service floor.

5. The dynamometer can prove useful as an aid in solving chronic engine problems, and as an experimental tool in establishing new adjustment standards, following changes in compression ratio, drive ratio,

fuel antiknock quality, etc. Its use as a tool for establishing new carburetor settings is primarily from the power standpoint. Calibrations designed for maximum power do not, as a rule, give best economy in transit service, and economy settings must, therefore, be developed from data obtained in actual road operation. However, once the carburetor calibration is established, spot checks along the speed and load range will show up major deviations.

(TURN TO NEXT PAGE, PLEASE)



Give Your Drivers This

Visible Check

on The Economy Range



STEWART-WARNER

Motor-Mile Tachometer

***Every vehicle has an Economy Range—the engine speeds at which it operates with greatest efficiency and economy.**

With a Stewart-Warner Tachometer, the Economy Range is always clearly indicated by stationary red markers on the face dial.

Result: The driver can always keep engine speeds accurately within the Economy Range. You save up to 25%

on fuel...cut oil consumption, too.

Because the Tachometer records all engine revolutions—idling as well as traveling—you have a *controlled* guide which tells you when your vehicle needs servicing. This can cut maintenance as much as 25%!

So install Stewart-Warner Tachometers on *your* fleet. See your Stewart-Warner jobber—or write Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

Dynamometer Tests

(CONTINUED FROM PAGE 157)

6. The chassis dynamometer is not a substitute for a good preventive maintenance program, and its effect is almost directly proportional to the skill and training of the shop personnel, and the competency of their supervision. However, it does appear true, that the chassis dynamometer will stimulate a desire to establish good maintenance practices

by the evidence it uncovers. At both garages where the program was conducted, there was a noticeable improvement in the accuracy of adjustments made by the shop personnel. These men soon became interested in the use of instruments and eventually requested the use of some of our specialized instruments in order to improve the accuracy of their work. Pride in accomplishment is a great incentive motive, or stimulus—herein lies a major value of a chassis dynamometer.

7. Personnel with a good understanding of the use of test instruments, and of the basic functional operation of vehicle components should be used to obtain best results from a chassis dynamometer. They should have general training in the rudiments of the operation of the chassis dynamometer, along with such fundamentals of engine performance analysis which would be required to conduct the work on a practical, but not too technical, basis. It would appear advantageous for the dynamometer operator to be selected from, or placed in, a supervisory classification.

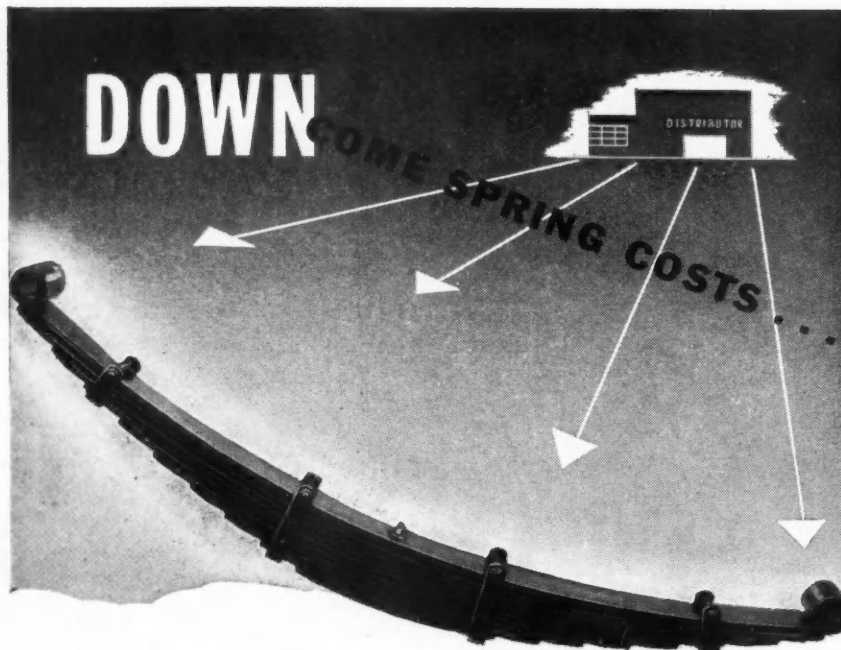
8. These data do not indicate the limit of the size of a fleet in which a chassis dynamometer is justified, in terms of initial and operating cost. A well-built instrument should last indefinitely, so that the initial cost can be written off over a 5 to 7-year period. There are many large fleets in this country that could profitably use more than one unit, and there are just as many small fleets that should not buy even one. Each fleet, before making a final decision, should examine its own situation and consult with other fleets that already operate their own units.

9. Careful prior planning should be done before installing the unit in a garage. Place it where it is easily accessible. Flush floor mounting is desirable, since it permits parking of vehicles over the unit at night, and the passing of vehicles over it during working hours. Therefore the charge against the unit for floor space rental becomes almost nothing.

Requirements of a Dynamometer EXPERIENCE has shown that there are certain very definite requirements of a chassis dynamometer installation, if it is to give satisfactory and adequate service to all vehicles. These are:

1. The unit should be large enough to meet the requirements of all of the vehicles in a fleet. When heavy duty vehicles are part of the fleet this will require ability to take dual tires; ability to take maximum axle loadings and ability to absorb from 150 to 300 horsepower or more depending upon the unit and the trend of engine design.

2. Choose a location where floor (TURN TO PAGE 160, PLEASE)



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Call nearest Rowland Distributor. He's supplied by these branches:

ATLANTA 3, Ga., William and Harvey Rowland, Inc., 449 Marietta St., N. W.

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► Many a fleet operator avoids high maintenance costs by turning over the job of periodic spring inspection to a Rowland Distributor. He learned long ago that spring inspection and repair is a highly specialized job; as well as a short cut to reduced maintenance costs and maintained schedules. Profit by his experience, turn your spring work over to a Rowland Distributor. There are nearly a thousand of them ready to serve and supply you with SPRINGS, universal joints and wheel suspension parts. Wm. & Harvey Rowland, Inc., Frankford, Philadelphia 24, Pa.

ROWLAND SPRINGS



LEAF • COIL • HELPER SPRINGS
• UNIVERSAL JOINTS •
WHEEL SUSPENSION PARTS



Save your fleet a load of trouble!

Right now — some of your units may be headed for breakdowns. That's extra serious these days . . . better locate the trouble *fast* — to save your fleet a load of trouble. Valvoline "Fleet Lab," by analysis, can detect the trouble and suggest the remedy.

Your first move is to change to Valvoline Motor Oil for maximum protection. Then send samples of crankcase drainings to Valvoline "Fleet Lab" for analysis. Valvoline engineers are experienced in practical maintenance. They can give you valuable advice on when to drain and how to improve operating methods.

Hundreds of fleets depend on advice from Valvoline "Fleet Lab." Ask your Valvoline man how this service can be obtained free— or write.

VALVOLINE

**FLEET CONTROL
LABORATORY SERVICE**

FREEDOM-VALVOLINE OIL COMPANY

Dept. 41G Freedom, Pennsylvania





DRY CHEMICAL FIRE EXTINGUISHERS

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SHOWING COMPARATIVE
RATINGS ON FLAMMABLE
LIQUID FIRES AS DETERMINED
BY NATIONALLY RECOG-
NIZED APPROVAL AGENCY.



Highest Ratings for Speed and Effectiveness

WITH THE NEW ANSUL-DUGAS DRY CHEMICAL FIRE EXTINGUISHER

Speedy-fast action is the first essential in preventing major fire damage. The NEW Ansul-Dugas Extinguishers, for Class B and C fires have the highest ratings for SPEED and EFFECTIVENESS, pound for pound, as determined by impartial authority. These highest ratings mean positive put-out of your incipient fires by ANY of your employees.



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FEATURES OF THE NEW ANSUL-DUGAS EXTINGUISHER

- Greatly increased fire-killing power.
- Expert extinguishing by inexperienced operators.
- Simplified—faster operation.
- Quicker, easier, on-the-spot recharge after use.
- Greater fire-fighting effectiveness, pound for pound, dollar for dollar.
- Longer range stream and greater shielding of heat from operator.
- Increased fire-fighting capacity without increased weight.
- Engineered to resist corrosion.

ANSUL CHEMICAL COMPANY
FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN

Dynamometer Tests

(CONTINUED FROM PAGE 158)

strength will permit maximum loadings—or strengthen floor at time of installation.

3. Particular attention should be given to provide adequate circulation of fresh air in the installation zone, together with a forced draft exhaust gas line.

4. Adequate lighting and electric power outlets greatly facilitate accurate and efficient work.

5. Auxiliary cooling should be available for certain vehicles.

6. The dynamometer should be able to hold full load for a reasonable period of time. It should be quiet and reasonably simple to operate. If, of the hydraulic type, it should not require large quantities of water, since this increases operating costs.

7. Generally dual rolls are preferable, since setting up the vehicle for test is simplified. An adequate blocking device should also be provided as a safety feature against the vehicle creeping off the rolls while on test. The spacing and size of rolls should be such that tire wear is not a problem. During the St. Louis tests some tire trouble was experienced with rear duals. It was felt that most of this was the result of war time synthetic and retreaded tires. Several tire companies have stated that this should not occur with tires now being built.

8. In addition to the power and vehicle speed indicators normally supplied with the dynamometer, adequate supplementary instrumentation of acceptable accuracy should be provided. In general the following group of instruments should be considered as essential: Engine tachometer, manifold vacuum gauge, power timing light, cam angle meter and exhaust gas analyzer.

END

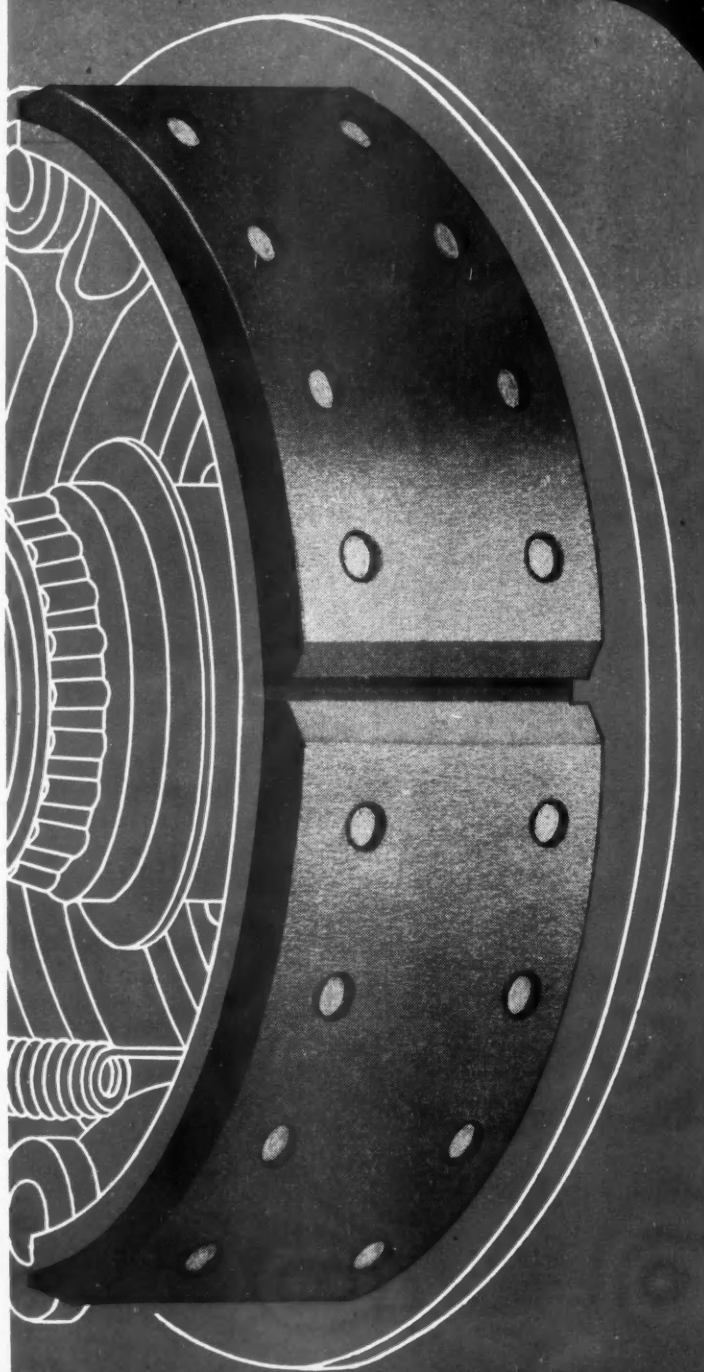
(Please resume your reading on P. 40)

... JOHN F. WINCHESTER is a director of Liberty Aircraft Products Co. Recently, he was made president of Davisbilt Products Co., an affiliated company



For Heavy Duty Service

Re-line with Thermo-Blocks



Thermo-Blocks—the heavy duty linings that give you the brakes—are built to “stand up longer”. Made particularly for heavy duty service, they always give top performance under any operating conditions. Their longer life reduces downtime, lowers maintenance costs. Get the Thermo-Blocks especially designed for your units. Use them on all heavy duty re-line jobs.

Thermoid

**The “Longer-Life” Line
for Heavy Duty Service**

Thermoid Company, Trenton, New Jersey

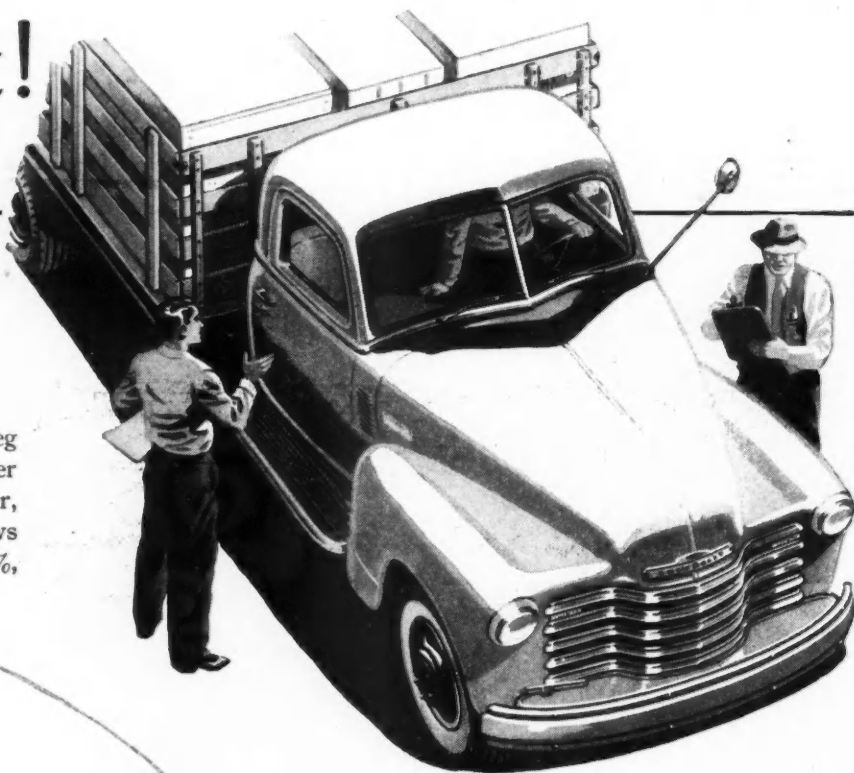
Copyright 1947—Thermoid Company

Thermoid • The Lining That Gives You The Brakes

Never before has there been a *new* line of trucks with so many features to talk about!

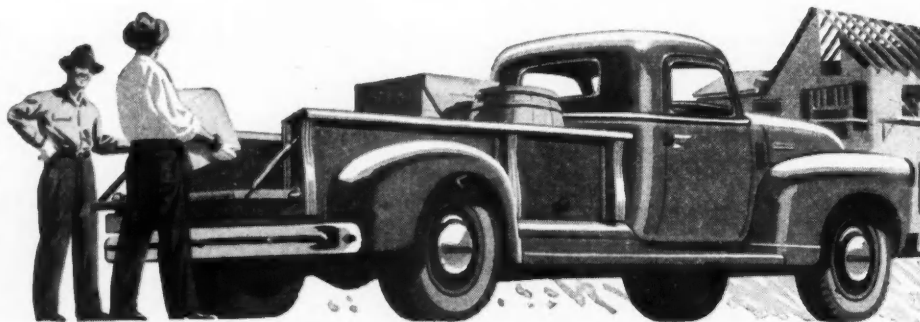
NEW FOUR-POINT DRIVER COMFORT. 1. The new cab that "breathes"—a stream of fresh air is drawn in from the outside—heated in cold weather—and used air is forced out.* 2. Driver's compartment is wider and deeper—more leg room. 3. New, fully adjustable, bigger and more comfortable seats. 4. Wider, deeper windshield and larger windows increase visibility from the cab by 22%, for safer, easier operation.

*Fresh-air heating and ventilating system optional at extra cost.



Chevrolet's revolutionary **FLEXI-MOUNTED CAB** is rubber-cushioned against road shocks, torsion and vibration; designed for longer cab life—one of many unique features in today's newest **ADVANCE-DESIGN** trucks. They're new from roof to road, from headlight to tail light, with performance that will give you better and more profitable results on any delivery or hauling job.

World's most economical for their size, Chevrolet's **VALVE-IN-HEAD TRUCK ENGINES** give extra power for extra profits. . . . You'll find **INCREASED LOAD SPACE** in panels and pick-ups to carry the larger loads and shorten the longer jobs—plus more efficient loading in stake and high rack bodies!



Drivers will find new comfort and new safety in the cab that "*breathes*"—"inhales" fresh air and "*exhales*" used air—that keeps glass clear and free from fogging... plus a host of other new features that make these trucks a "*must*" for you to see!



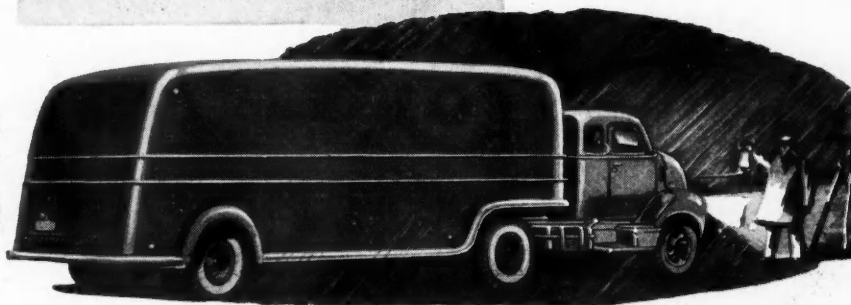
Chevrolet's stronger, sturdier **FRAMES** with new super-cargo capacity are designed to carry *greater* loads *greater* distances for a *longer* time. . . . Chevrolet's famous **FULL-FLOATING HYPOID REAR AXLES** are geared for your load on any road.

SEE YOUR CHEVROLET DEALER

He can supply Chevrolet trucks, standard or with special equipment, to meet your hauling needs.

Longer-than-ever **WHEELBASES** for more room in the cab... better load distribution!

Chevrolet's **HYDRAULIC TRUCK BRAKES** are quick, safe and dependable! Here is exclusive special linkage, designed to produce brakes at their best!

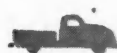


NEW ADVANCE-DESIGN

CHEVROLET TRUCKS

FOR TRANSPORTATION UNLIMITED

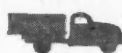
CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN



PICK-UPS



PANELS



STAKES



CAB-OVER-ENGINE



TRACTOR-TRUCKS & CHASSIS FOR SPECIAL EQUIPMENT



Job Specialists

(CONTINUED FROM PAGE 36)

Lubrication Crew

ANOTHER two-man crew does the greasing and oil draining. They also keep the lubrication records. We find that this is the ideal place to keep the records, and that it is naturally convenient for this crew to record lubrications. They grease and change oil and filter cartridge on each fifth trip or about 1800 to 2000

miles. Any abnormal increase in oil consumption is reported by this crew or by the driver. This sends the vehicle to the dynamometer, and whatever the test indicates should be done is then started.

Washing Crew

THE washing department is operated by another crew. They have the regular equipment, including a steam cleaning outfit, but they have an extra chore. Parts removed from units destined to the rebuilding de-

partment, actually go to the washing department first. Engines also are delivered to the washing department when removed. After thorough cleaning, the washing department then delivers to the machine shop. This insures that the machine shop department receives clean units for rebuilding. They get them in an orderly and routine manner, and there is no question as to whose responsibility it is to clean dismantled parts.

The question of when to wash vehicles is a hard one to decide. Someone once said that they should be washed when dirty. Our wash crew washes all day long. Efficiently organized, it gets as many washed as it can. The result is that the fleet is being constantly washed at the capacity of the department, which does the job nicely.

Parts Stockroom Crew

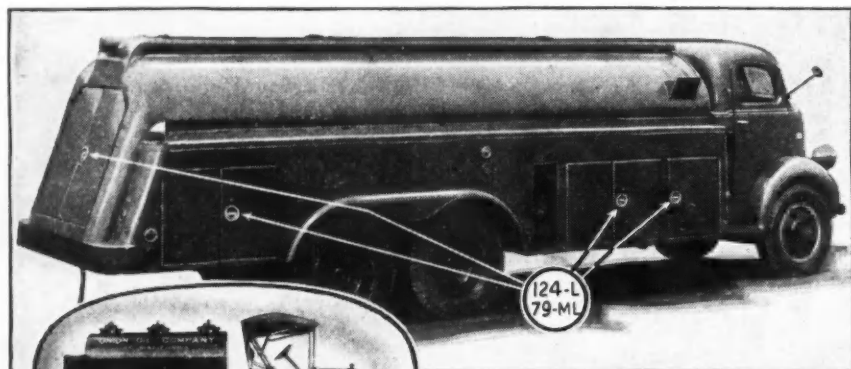
TWO men comprise the stockroom crew, plus a man to operate a pick-up truck which is used to go after parts. These two men take orders for and issue all needed parts, and make out replacement orders for the supplier when the bins get low. They also spend all their time figuring ways and means to get parts in stock either by rebuilt units from our own machine shop, new units from jobber or manufacturer, or, on a scarce item, to send our truck all over town to find it. The result here is that, even during the most critical period of the parts shortage, we seldom had our regular routine disturbed by a lack of parts because the parts men were always on the job trying to get them.

Body Maintenance Crew

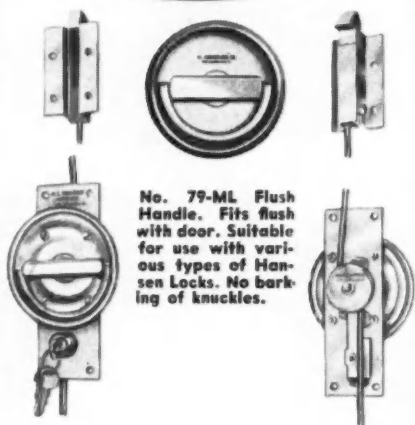
WE HAVE a body shop and the crew that works there does nothing else. We send no body work out. This crew consists of four men. They can tear down a trailer to the frame and rebuild the body for about \$800. Like the other departments they have become more proficient through constant practice.

Tire Maintenance Crew

NO STORY of our labor distribution would be complete without an outline of our tire department. This crew consists of four men, one of whom is the crew leader. Three
(TURN TO PAGE 166, PLEASE)



DON'T BE BEHIND THE TIMES WITH YOUR HARDWARE MODERNIZE WITH HANSEN



No. 79-ML Flush Handle. Fits flush with door. Suitable for use with various types of Hansen Locks. No barking of knuckles.

No. 124-L Slam-and-Take-up Lock, with Locking Cylinder and 79-ML Flush Handle. Two keys, Tamper-proof lock. Flush or offset bolts, as specified.

At right and left of panel are shown front and back views of No. 124-L Slam-and-Take-up Lock. Simple, Compact, Safe, Attractive. Easy to install. Extensively used.

TANK, truck and trailer design has come a long way—so has body hardware. To meet such advances, Hansen Commercial Body Hardware has been continually improved and modernized in design.

Basic in its design, Hansen Hardware remains modern for long periods. Very few Hansen designs ever become obsolete, proving their fundamental soundness. This basic soundness is important in both appearance and performance.

If you specify, apply or use Hansen Hardware, you have the definite assurance that it will withstand the most exacting service. Hansen makes a complete line of Locks, Regulators, Hinges and Handles.

Write for folders illustrating and describing Hansen products in which you are specially interested.

HANSEN AS MODERN AS THE MOST MODERN BODY



A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.

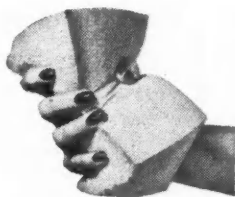
UNITED STATES RUBBER COMPANY

SERVING THROUGH SCIENCE

Angel Food Cake?



NO, IT'S KOYLON FOAM



IT means *good comfort* instead of good eating, but there's a lot about Koylon that compares with a piece of fluffy cake. This amazing cushioning and mattress material is *light-as-a-feather*. (So easy to handle!) Koylon is *porous*. (Keeps cool because of air circulation!) And, Koylon is made up of *millions of tiny cells* containing cap-

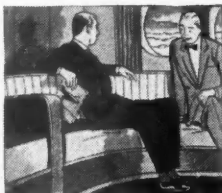
tured air. (So resilient—yet gently buoyant!)

But, while the comfort of Koylon is gentle—depend on this wonder material to be tough! It has been wear-tested for over 12 years. Wherever you provide the comfort of Koylon you know it's there to stay—another good reason why it pays to specify Koylon Foam.

WHEREVER COMFORT COUNTS, PUT



12 years of testing on major railroads prove that comfortable Koylon is long-wearing!



The matchless comfort of Koylon wins and keeps more passengers for modern bus and air lines!



In new cars, the matchless comfort of Koylon helps to lessen driving fatigue. A safety feature!

U.S.
Koylon
FOAM
Comfort Engineered



U. S. Koylon Foam Division, Mishawaka, Indiana

Job Specialists

(CONTINUED FROM PAGE 164)

of the crew make all the tire repairs and changes and one man takes care of checking the air. The air pressure in the tires for the whole fleet is this one man's responsibility.

Clean-up Crew

THE clean-up crew is composed of two men. One of them comes in at 5 o'clock in the morning and

starts the clean-up by mopping. At this time in the morning it can be done. The second man comes on at 3 o'clock in the morning and starts sweeping. This crew cleans out the departmental stalls, the machine shop, body shop and all departments. It keeps them busy for their full day's employment.

Night Crew

THE shop operates 24 hours a day and seven days a week and the night crew is organized on a different

principle. Six men work at night under the jurisdiction of a working foreman. All seven men are expert trouble shooters and all-around men. They are able to do anything to keep units rolling. They do no overhauling or repairing. They do replace and remove parts and expedite the efficient movement of trucks.

Trucks Gassed off Premises

WE HANDLE the gassing of our trucks differently from most fleets. Our trucks get gas at two commercial service stations located on each side of town. We have our own pumps and tanks at these places, and the gas is pumped by the regular attendant. We pay for the amount of gas pumped into the trucks. This eliminates pumps at the shop and a man to operate them. Since using this system for a considerable time we are convinced that it results in considerable economy over the other method. Our trucks pass by without driving out of the way and they fill coming in or going out.

Machine Shop Departmentized

THIS covers all the operation outside of the machine shop where all the rebuilding takes place. We have organized and departmentized the machine shop into six departments.

No. 1 department takes care of carburetors, fuel pumps and distributors and this man takes care of the chassis dynamometer tests as mentioned previously. He has all the equipment necessary to do his work. He has a distributor testing machine and all the other equipment needed.

No. 2 department does all the work on differentials, transmissions, clutches and water pumps, and he has the necessary tools and equipment for efficiently carrying on his business.

No. 3 department works on engine heads, valves and cold welds when necessary. You can readily see that in engine rebuilding that this department functions just the same as if they were reconditioning a head for the service department working on a waiting tractor.

No. 4 department is the engine rebuilding department. They get the washed engine that has been taken out of a tractor from the washing department. They dismantle. They

(TURN TO PAGE 168, PLEASE)



To survive rising material and labor prices, each operator must analyze each operation for every available means of decreasing operating expenses.

A few cents here and a few cents there will result in surprising savings. Thousands of operators take advantage of a "few cents here and a few cents there" by using Hoof Governors. Controlled operation, with its automatic savings, offsets the cost of the governor within a period of four to six weeks . . . frequently less. You can hardly afford to operate without this protection.

Send for new catalog . . . discover how much you save at so low a cost.

KEY and SEAL TYPE GOVERNORS AVAILABLE FOR IMMEDIATE DELIVERY
HOOF PRODUCTS CO., 6543 S. Laramie Ave., Chicago 38, Ill.



GOVERNORS SET THE PACE

FLEET OWNERS, it pays to do your own Painting



*in a well-lighted
dust-proof*

DEVILBISS PAINT SHOP

With this modern equipment you can initiate a systematic truck painting program and handle the work easier, faster, better and less expensively.

No more will dust and dirt plague spray operators and necessitate extra hours of sanding and polishing time. Filter doors seal out dirt—admit only clean air to the finishing room. And fluorescent lighting fixtures produce abundant soft light without annoying glare or shadows to hinder the paint application. Underwriters Laboratories have tested and approved them too, because they're VAPOR PROOF. Now spray operators see better and work faster in a cool, bright atmosphere.

DeVilbiss-designed, fast-action paint shops make regular paint conditioning of your truck fleet possible at low cost—get good looking trucks back to work with the least loss in revenue.

THE DEVILBISS COMPANY • Toledo 1, Ohio
Canadian Plant: WINDSOR, ONTARIO



*Here's
Why*

- You save money—painting costs are less.
- Your fleet is painted more frequently.
- Better protection—increased advertising value results.
- Better, faster painting jobs are possible.
- There's less lost travel time—more freight revenue for you.

DEVILBISS



means Quality in all four..

SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS

Job Specialists

(CONTINUED FROM PAGE 166)

distribute the dismantled accessories to the proper machine shop departments. When the engine is stripped down to the block, they check crankshaft, pistons, rings, connecting rods, and so on, replacing all worn parts with new ones.

No. 5 department is the battery rebuilding department. We rebuild all our batteries as many times as we

can. It is common knowledge that the positive plates wear out first and replacement of these plates often puts the battery back to new condition. Then there are broken cases, broken posts to be taken care of. Battery charging is done in this department.

The battery department receives the dead or weak batteries that have been removed by the maintenance crew. It checks to see whether the battery needs recharging, rebuilding or repairing. When the battery has been restored to service, it goes to

the parts department and is reissued when a battery is called for.

This is a very valuable department because so many different situations can be handled. The battery man can take plates from a standard six-volt battery and make them into a 12-volt battery, by adding the additional plates and placing them all into the 12-volt case. Any batteries handled as freight which become damaged in handling, and which have to be replaced by the insurance and thus become our property, are turned over to the battery department which by one way or another converts the material into useable 12-volt batteries.

The No. 6 department of the machine shop handles only generators, starters, voltage regulators and heaters. Here proper test equipment and repair equipment for those units are assembled. Generators and starters pass the hurdles on a torque machine before going to the parts room. Starter brushes are worn in, and all the little things that mean so much when these accessories are placed on an engine, are done.

To sum up, come-backs of all kinds have been reduced to a point where they don't mean anything. Whether it is brushes in a generator or a new engine, almost 99 per cent of the work goes out and does a good job. Some of this excellence is attributable to our system of pre-fixing responsibility.

If there is a question as to who has done a job, all I need to know is what kind of a job. The responsibility is the crew leader of the crew that does that kind of work. He in turn discusses the problem with his crew.

But the crew leader is the responsible person—that's why he is the crew leader. He lays out the work for the crew, often inspects and decides exactly what is to be done. In actual operation, because of this responsibility, every employe in the shop takes more pride in his work and gladly accepts the responsibility. Moreover, by reason of having the responsibility, he is quick to ask for needed equipment, often points to changes that would benefit his position and help ours. It all results in higher efficiency and better working conditions for all.

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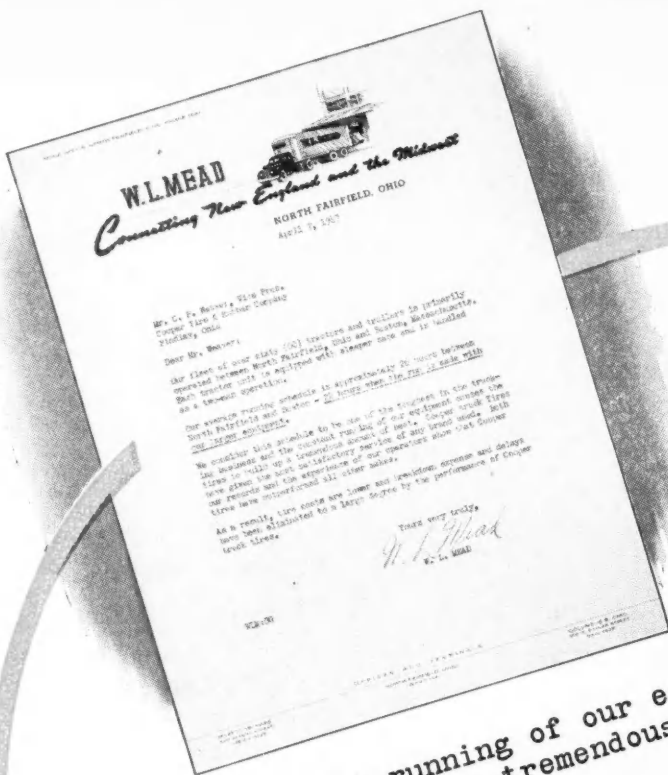
(Please resume your reading on P. 37)

Tools that meet every requirement

✱ Herbrand tools meet every requirement of the jobs for which they are built...accurate fit, functional design, fine balance and rugged durability. They are made to outlast ordinary tools through the use of finer materials and precision manufacture. This superior quality assures a reserve strength that comes in handy for super-tough jobs.

All Herbrand tools now available are of the same top quality that has made their name a by-word among skilled mechanics for over 65 years. *Good* mechanics know and appreciate *good* tools—and, of course, demand Herbrand. Ask your Herbrand jobber, or write us for complete details on this line of superior quality tools.





**profit by the
experience
of others**

"The constant running of our equipment causes the tires to build up a tremendous amount of heat.
"Cooper truck tires have given the most satisfactory service of any brand used.
"Both our records and the experience of our operators show that Cooper tires have outperformed all other makes."

**Try cooler-running Coopers on
your toughest hauls.**

Match them against any other brand.

**Let your own records prove
that Coopers really make payloads
more profitable.**

DISTRIBUTED STRESS CONSTRUCTION is the important reason why tire dollars go farther when trucks roll on cooler-running Coopers. See your Cooper dealer and see him soon for complete details about DSC — how it works, how it protects against localized flexing and high friction heat.



Cooper Tire & Rubber Company

Factories at Findlay, Ohio

Dirty Lubrication

(CONTINUED FROM PAGE 47)

employs rotating bearings as well as sliding action on the cylinder walls. The products of combustion are added to complicate further the problem.

Ambient temperatures at which the engine is operated again range from -50 to +200 deg. Fahr. The oil may reach temperatures as high as 300 deg., and the bearings will

almost always be 30 to 50 deg. hotter than the oil. Cylinder walls may go to 450 deg. and the piston head, of course, is even hotter. Gas pressures go as high as 1200 lb. psi., rod and main bearing pressures may be as high as 3500 psi., and piston pins are even higher. Pistons move at speeds up to 60 m.p.h., and bearings move at over 30 m.p.h. Now let's carelessly throw a little dirt into this maze of moving parts. What chance has the oil got? Not a chance when it comes to overcoming dirt.

OUT OUR WAY



Safety is "in the bag" with Sol-Speedi-Dri

• Operators of filling stations, garages, shops, bus- or truck-terminals know that SOL-SPEEDI-DRI, a fast-acting absorbent for all liquids, works like a charm in cleaning up oil-soaked floors and surfaces.

SOL-SPEEDI-DRI, the field's original and foremost absorbent, is obtained by *selective mining*. Only the

top-quality raw material is used—and this material is transformed into the finished product by the most modern equipment and methods.

Laboratory control and weather-proof packaging guarantee maximum efficiency from every pound of SOL-SPEEDI-DRI you purchase. When you use SOL-SPEEDI-DRI, you get *more* for your money.

Safety and
Maintenance Co., Inc.
No. 1 Wall Street
New York 5, N. Y.

Warehouse Stocks Maintained
in Principal Cities of the
United States and Canada.



Chassis Equally Important

THE CHASSIS is equally important to the operation of the vehicle. Even the spring shackle is important. Every time a dirty grease gun is applied to a dirty fitting, a measured amount of dirt is forced in to help wear out the pin and bushing. The universal joints receive the same charge of dirt along with the grease if the fitting and grease gun are not cleaned. King pins, tie rods, and innumerable other places can be as badly abused by careless treatment. All the oil man can do is go away cussing after seeing all the abuses that are commonly practiced in the shop, when it comes to handling and dispensing petroleum products.

I know I have made this talk sound as if no vehicle would go out and run even for a single day, without failing from all this dirt you fellows add. I don't want to leave that impression, because we know it is not true. Between the vehicle manufacturer and the oil man, the equipment of today has a very fine chance of outliving its before-the-war predecessor, even though bearing pressures, compression pressure, and overall road speed and payloads have been increased.

The oil men have progressed a pace with this trend. The fact is that they are ahead of these trends in a good many ways. They know from listening to you fellows for so long that what you demand is dependability and peak performance from their products. They know you want long life from your parts and that you want economy when it comes to the cost of your petroleum products.

The additives now employed generally by the oil industry, in their engine oil and gear oils, add much to the peak performance because they give adequate protection to metal surfaces against wear and corrosion. They hold lacquer and sludge deposits to a minimum. They afford easy starting and give prompt circulation. In addition, today's high V.I. oils provide maximum economy—far beyond the fondest dreams of the early day petroleum chemists. These things are made possible not only by modern refining methods but also through the use of present day additives.

(TURN TO PAGE 172, PLEASE)

World's Finest



"Out where the tall corn grows" . . . where you can "see it grow" . . . and even, on a still night, "hear it grow"—that's America's breadbasket area of midwestern states, where no one would dispute, the corn is World's Finest.

And there are no finer automotive parts in all the world than

Genuine **TOLEDO**

For almost a half century Toledo parts have been proving their exceptional worth from Coast to Coast in every type of automotive vehicle. So it is no wonder that thousands of "America's Men Who Know Motors" continue to specify Toledo. For parts from Toledo's factories, which are standard equipment in so many new cars, trucks, buses and tractors lead the field in replacement preference.



The **TOLEDO**

STEEL PRODUCTS COMPANY • TOLEDO, OHIO, U. S. A.

SINCE 1906

Makers of Fine Automotive and Aircraft Parts



Thrifty

IS THE



FOR

CAR AND TRUCK REPLACEMENT



MARVEL-SCHEBLER CARBURETOR DIV.
BORG-WARNER • • FLINT 2 MICHIGAN

Dirty Lubrication

(CONTINUED FROM PAGE 170)

Oil Must Be Given Even Break

THE OIL industry can rightfully boast that they do have products that will perform dependably. It may be that you fellows, because of your exacting demands, have had something to do with this progress.

However, as I have tried to point out, the petroleum product must be given an even break. And with an even break the oil industry does have available today a good dependable product for every automotive need. The vehicle manufacturer and the oil man have worked together on this and when a product recommendation is made by an oil company, with the approval of the vehicle manufacturer, you can be assured that a great deal of work was involved before the recommendation was made.

I must emphasize, however, that oil is not a cure-all. There are many factors which affect the life of the engine. Some of the more important factors are: the design and construction of the engine, operating conditions and re-building procedures. Careless workmanship at overhaul time often can put two strikes on the life expectancy, of both the engine and the oil.

Many overhauled engines which otherwise could have lived a normal life have been injured beyond repair by dirt left in them during the overhaul. I have seen many cases, where bearing samples and oil samples have been sent to the laboratory for analysis. It is almost invariably stated that the engine was just overhauled, 1000 or 2000 miles ago, and the bearings failed.

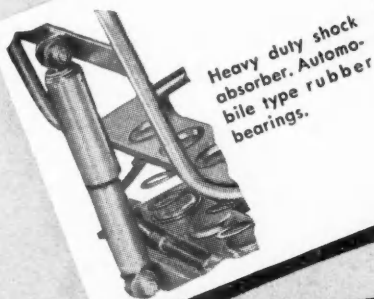
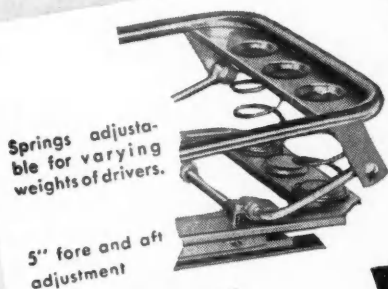
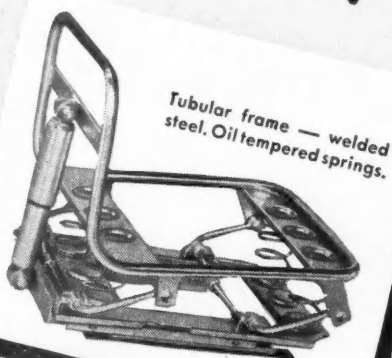
Again almost invariably the answer from the laboratory comes back—look at the dirt in this oil and in the bearing. It could not possibly have gotten into the engine in 1000 miles—abrasives and foreign material that can only enter the engine over a long period of time, even considering the possibility of careless handling. It simply was not cleaned out at overhaul time. Instead the dirt was knocked loose and allowed to get into the oil stream with the result that the engine was ruined and the cost of the overhaul was lost.

END

(Please resume your reading on P. 48)

Smoothest Ride in Truck History!

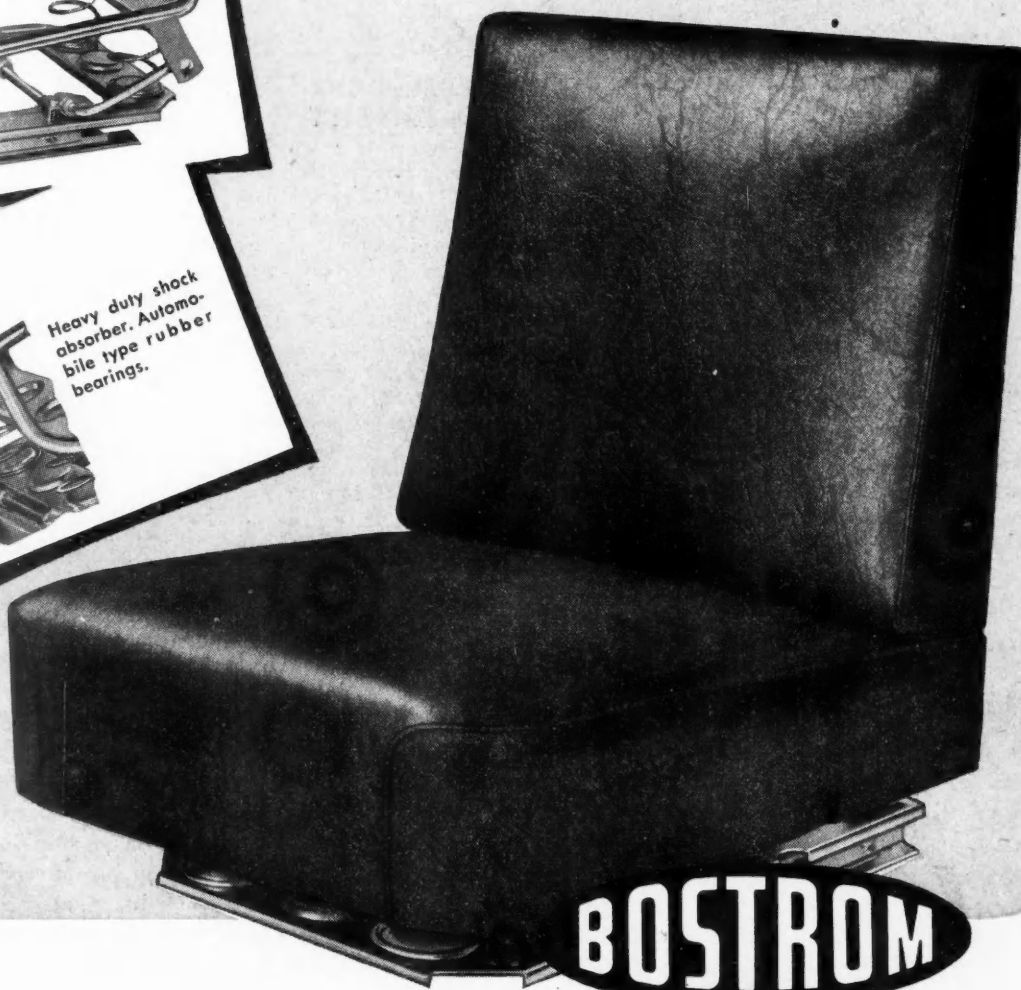
The Bostrom Level-Ride seat is the last word in truck seat comfort. Hydraulic shock absorber . . . passenger car suspension under the cushions . . . rubber bearings . . . oil tempered springs . . . tubular steel frame . . . adjustment for various weight drivers, rough and smooth roads . . . five inch fore and aft movement for short and tall drivers—these features make for the smoothest ride in truck history. Proved by truck manufacturers, large fleets, and drivers. Guaranteed to meet your requirements. Order today through your dealer or direct.



High quality cushion materials made to outlast ordinary cushions six to one.

- No. 10 Bostrom Level Ride Seat\$64.75 ea.
- No. 10 Bostrom Level Ride in lots
of six or more\$59.50 ea.
- No. 15 Bostrom Companion Seat
(without hydraulic suspension)\$28.50 ea.

BOSTROM MANUFACTURING CO.
Milwaukee 2, Wisconsin



BOSTROM

Federal Models

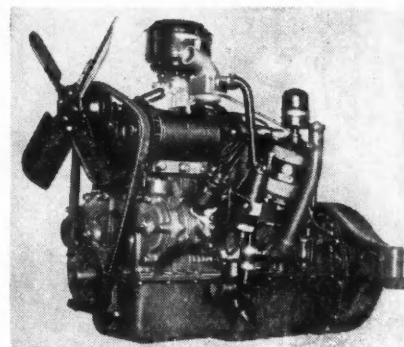
(CONTINUED FROM PAGE 86)

with a Brown-Lipe 6231-B three-speed auxiliary.

Rear axle set-up is as follows: Model 25M, the Timken H-100-DPH hypoid single speed axle with a ratio of 6.8 to 1, with lubricant capacity of 10 qt. on Model 25M2, the Timken H-300-DPH two-speed hypoid helical double reduction axle with a high range ratio of 6.13 to 1 and

low range of 8.15 to 1; on the Model 29ML and 29MLA, the Timken L-100-DPH single speed hypoid gear axle with ratio of 6.83 to 1; on the 29ML2, the Timken L-300-DPH hypoid helical double-reduction axle with high range ratio of 6.32 to 1, low range of 8.22 to 1.

Front brakes are Lockheed hydraulic—16 x 2¼ in. on the Series 25M, 16 x 3 on the Series 29ML. Timken dual primary hydraulic brakes are standard at the rear on all models except the 29MLA—16¼ x 3½ in.

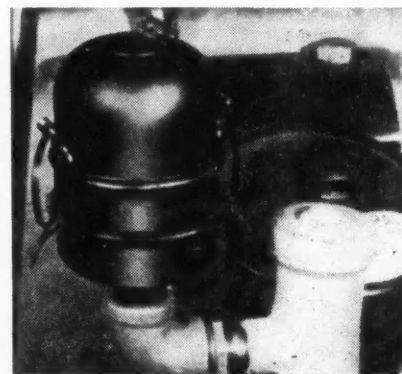


Left hand view of Hercules engine

on the Series 25M; 16½ x 5 in. on the 29ML and 29ML2. The 29MLA has hydraulic brakes on the rear. The 29MLA is fitted with the ACC Tru-Stop parking brake while the other models have drum type parking brakes. The Bendix Hydrovac vacuum self-contained power unit is standard on all models.

The Gemmer worm-and-roller steering gear with ratio of 18.5 to 1 is used on the Series 25M, while the triple-tooth worm-and-roller Gemmer gear of 20.4 to 1 ratio is found on the Series 29ML models.

Needle bearing propeller shafts are used on all models, with torque capacity of 1900 lb. ft. on the Series 25M; 2750 lb. ft. on the Series 29ML.



New oil bath breather prevents abrasive materials from entering the crankcase

Other Features

AMONG other features common to all models considered here are: the use of multiple type wiring with an individual fuse for each circuit, cold-riveted frames, all-steel cabs, waterproof oil-filled Delco-Remy coils, and finger tip control on the instrument panel for vacuum

(TURN TO PAGE 178, PLEASE)

WELD...CUT...BRAZE...SOLDER



TAKE ALL AUTOMOTIVE JOBS IN STRIDE
STEEL...CAST IRON...
NON-FERROUS METALS

MARQUETTE

Oxy-Acetylene
WELDING And CUTTING
EQUIPMENT

OUTFIT No. 1. This Combination is designed to take all automotive jobs in stride efficiently and speedily. Tip changes to fit the job can be made quickly without use of wrenches. You can skip from welding to cutting with the speed of tip changing. This outfit is complete in every detail—no extras to buy.

Marquette has a complete line of Gas Welding and Cutting Torches, Regulators, Hoses, Goggles, Gas Welding Rods, Accessories and all types of Fluxes. There are Marquette Outfits or Combinations of the latest advanced design to meet every need.

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EQUIPMENT
BATTERY CHARGERS
A.C. ARC WELDERS • ELECTRODES
GAS WELDING And CUTTING EQUIPMENT
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MARQUETTE MFG. CO. INC.
MINNEAPOLIS 14, MINN.

FRAM SAVES YOU REPAIRS, TROUBLE, MONEY

... because

FRAM

**Cleans
the Oil
that
Cleans
the Motor**



We don't "claim" it—we unconditionally **GUARANTEE** Fram oil filters! Install Fram filters on your fleet. If you feel, within 90 days, that you can afford to operate without them, your purchase price will be cheerfully refunded. If your fleet already has filters, install genuine Fram replacement cartridges to remove dirt, dust, grit, sludge and abrasives that grind away or gum up vital engine parts. Call your Fram distributor today! Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto, Ontario.

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CLEANER**

Cleans the Oil that Cleans the Motor

*Don't buy
any medium-
duty steam
cleaning
machine until
you see the
sensational
low-priced*

NEW MODEL C

**KERRICK
LEANER**

\$437⁵⁰ FULL PRICE



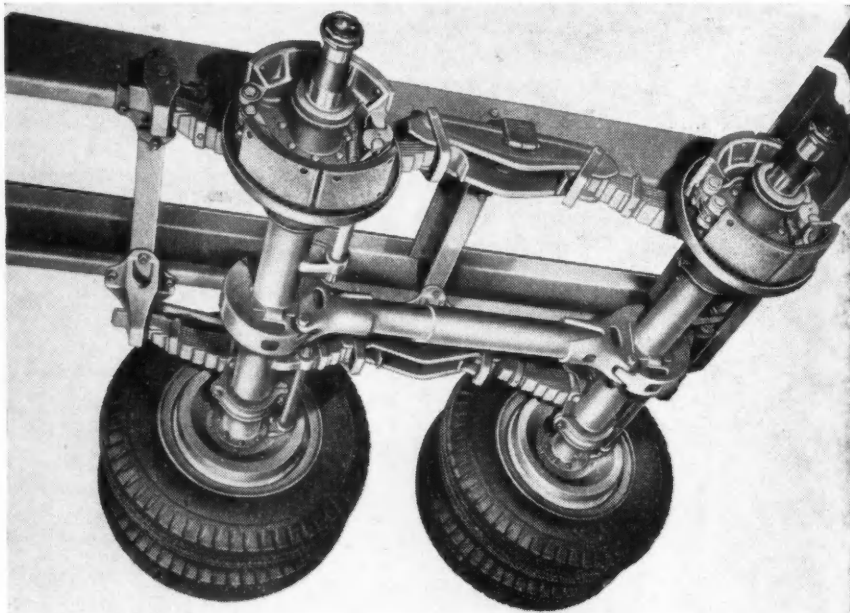
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**MAIL THIS
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STORY ON
THIS NEW
PROFIT
BUILDER**

Clayton Manufacturing Co. C-7
El Monte, California
Please send full information on the new
Model C Kerrick Kleaner:

Firm _____
Name _____
Address _____
City _____
State _____

New Bantam Suspension System



DEVELOPMENT of a new series of standardized Tandem Axle models to broaden its line of Bantam Supercargo truck trailers has just been announced by the American Bantam Car Co., Butler, Pa.

Outstanding feature of the new tandem axle series combines the use of a "free-floating" type spring suspension and a tubular steel torque tube. Four high-capacity springs are mounted on free-float-

ing axle journals in a manner that permits free forward and backward action without distorting their proper load-carrying position.

No shackles are used, permitting free movement in the stress proportioned spring hangers which assures equal load distribution on all four springs. The intra-axle torque tube is securely mounted to each axle and is cushioned in rubber.

**STOP
THIS** *with* **PERFECT
VALVE PACKING**

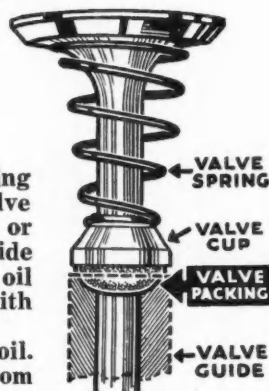


INSURE against leaky, oil-wasting valves by installing Perfect Valve Packing in every valve-and-carbon or piston ring job. Hugs close to the guide—just enough pressure to keep the oil in, yet not enough to interfere with valve action.

Graphite base lubricates without oil. Steel valve cup protects packing from oil and water.

Easy to install. No special equipment required. Sizes for all passenger cars and trucks up to 1/2" valve-stem.

Every customer a good prospect. Extra profits for you!

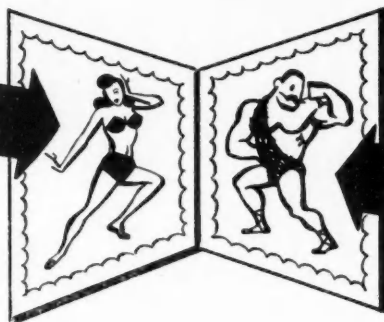


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on this and
many other
popular items.**

Write us if your jobber can't supply you.

PERFECT PARTS, INC., 55 Amsterdam Avenue, New York, N. Y.
Also Distributed by NAPA Distributors and Wilkening Mfg. Co.

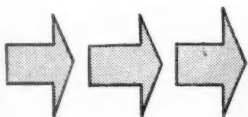
the Body Beautiful



the Body Durable

WONDERFULLY WEDDED IN THE

KRIEGER custom styled van



- 1 — Strength of All-Steel Construction
- 2 — Simplicity of Interlocking Sections
- 3 — Beauty and Durability of Custom-Built Bodies
- 4 — High Tensile Steel for Extra Strength, Lighter Weight
- 5 — Allows 20% to 30% Extra Payload
- 6 — Available in Body Lengths of 12', 14', 16'
- 7 — All Steel Top
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10 ALL-STAR FEATURES

KRIEGER STEEL SECTIONS, INC.

11-11 34TH AVENUE
LONG ISLAND CITY, N. Y.



Safety and EFFICIENCY



VENTALARM[®] SIGNAL OFFERS BOTH!

- NO BLOW-BACKS
- NO OVERFILLING
- NO SPILLAGE due to temperature expansion
- NO "SPLASH FILLING"

Commercial operators and fleet owners earn double dividends — in safety and fast-selling, non-spilling efficiency — with VENTALARM equipped automotive gas tanks.

VENTALARM completely stops the waste and hazard of spilled gasoline caused by overflow, blow-backs, and temperature expansion — eliminates loss through evaporation due to "splash filling."

With VENTALARM, your attendant simply "Fills at full speed 'til the whistle stops." Vehicles spend less time at the fill point; more time in profitable road operation.

The VENTALARM Fill Signal is now standard equipment on twelve makes of buses, trucks, and taxicabs. Specify it whenever you order new automotive equipment!

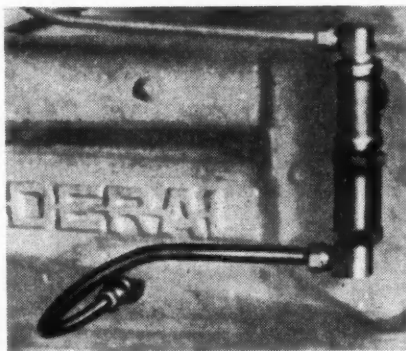
SCULLY SIGNAL COMPANY
CAMBRIDGE 41, MASSACHUSETTS



Federal Models

(CONTINUED FROM PAGE 174)

power shifting of two-speed axles. In addition, both the crankcase and transmission are fitted with Lisle magnetic plugs which pick up metallic particles and prevent them from circulating with the lubricant.



Positive crankcase ventilating system utilizes force of engine to draw water, fuel and acid vapors from the crankcase

Cabs are of all-steel construction, with one-piece turret tops, reinforced and supported on frame at all three points on rubber cushioned springs to prevent racking. They are insulated to reduce heat and noise from the engine. Seats and backs are adjustable, broad and deep, thickly padded over hour glass cushion springs and are upholstered with vinol plastic Naugahyde.

Cab equipment includes arm rests, dome light, dual windshield wipers and sun visors. The V-type windshield can be individually opened on either side. Door glass is edged with metal stripping to reduce the possibility of breakage. The cowl assembly has screen top and two side ventilators. Instrument panel is indirectly lighted and designed to insure maximum driver visibility.

Dayton steel spoke wheels with 8.20x20 tires are standard on the Series 25M, with Budd 6-stud disc wheels available at extra cost. Other options include Dayton and Budd 6-stud disc wheels with 9.00x20 tires. Standard equipment on the Series 29ML are Dayton steel spoke wheels with 9.00x20 tires. Special equipment includes Budd 10-stud disc wheels with standard tires; Dayton and Budd wheels with 10.00x20 tires.

END

(Please resume your reading on P. 90)

Forecast:



SNOW

**WITH THE USUAL BLOCKED
ROADS, LOSSES IN TIME,
MONEY AND EFFICIENCY...**

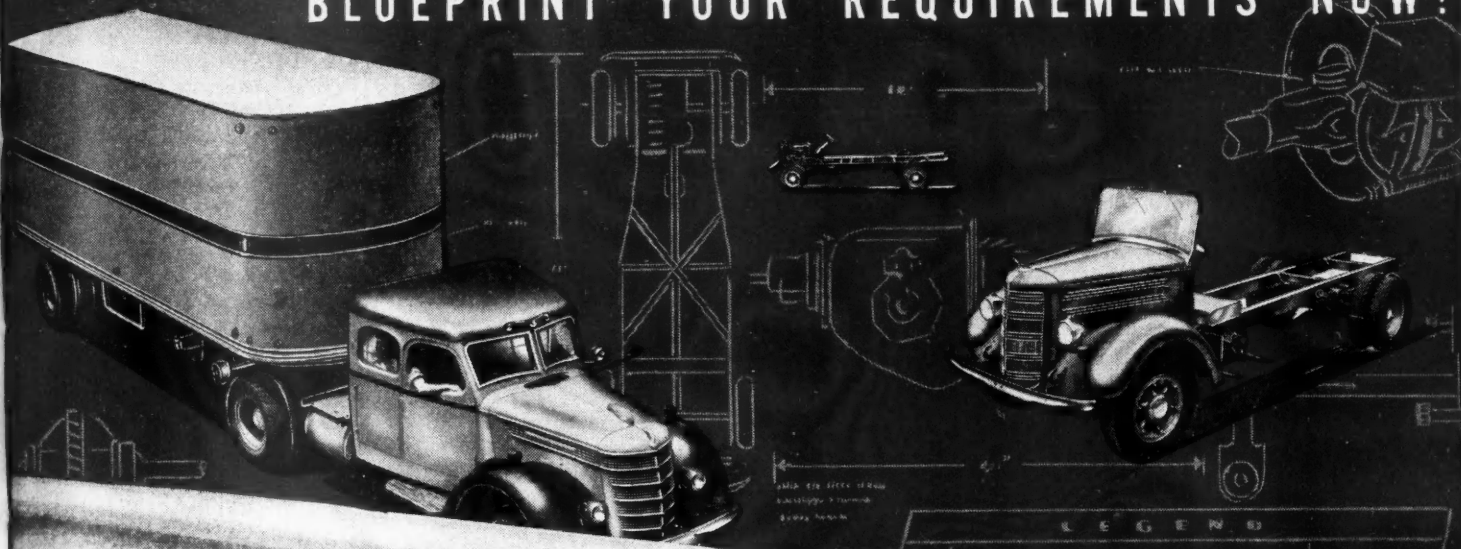
Baker truck-mounted snow plows provide all-around, ever-ready snow removal — with sizes and types to handle snow of every depth and consistency. Available in V-Type, Reversible and Landside models, Baker plows are ruggedly constructed, amply reinforced — designed to withstand the toughest snow removal conditions. Such features as tripping blades, scientifically shaped moldboards, hydraulic controls, and provision for easy attachment and removal have made Baker plows the outstanding choice of transport lines, fleet-owners, and industrial motor pools since 1908. Write now for literature and additional information.

THE BAKER MFG. CO.

571 STANFORD AVE.
SPRINGFIELD, ILL.

BAKER
TRUCK & TRACTOR
**SNOW
PLOWS**

BLUEPRINT YOUR REQUIREMENTS NOW!



TRUCK PARTS

Use the quick-reference Property Lists available at any of the WAA Customer Service Centers or Regional Offices conveniently located throughout the country. Check your requirements against available stocks. Information includes manufacturer's code number, manufacturer's catalogue part number, manufacturer's list price.

HERE'S HOW YOU ORDER TRUCK PARTS

- Go to your nearest WAA Customer Service Center or Regional Office.
- Ask for the Automotive Parts Section.
- Examine (a) the Critical Property List; (b) the Normal Property List
- Make up your own list by manufacturer's part number.
- Place your order.
- That's how simple it is!

All the information you need for ordering truck parts at huge discounts is compiled in one volume—which is kept up-to-date by means of a revised inventory every six weeks. Supplements on critical items, for priority claimants only, are issued every three weeks. You can tell at a glance what we have, how much is available, and the manufacturer's list price.

This easy-to-use reference covering millions of surplus truck parts is for your convenience in ordering. The parts listed were manufactured for all makes

and models used by the armed forces. This information is available at the Automotive Parts Section in each WAA office, but is centrally compiled in Detroit.

Make full use of this up-to-date inventory to solve your parts requirements problem. You can place your order on the spot for prepaid shipment. Visit or write the Automotive Parts Section of your nearest WAA Customer Service Center or Regional Office at your earliest opportunity.

TRADE DISCOUNTS

(Minimum sale—\$500 net)

Discount off manufacturer's list price as shown in Property List:

Fleet Owner (5 or more vehicles) 45%

Service Garage 50%—Vehicle Dealer 55%

Manufacturer, Distributor, Exporter 75%

WAA POLICY

For parts in limited supply: When orders for such parts are received, the parts are allocated equitably as follows: 30% of parts in short supply will be held to fill orders from Federal agencies. Orders from other buyers will be filled in the following sequence:

- (1) Certified Veterans of World War II
- (2) Subsequent priority groups
- (3) Non-priority

For parts in normal supply: A reserve of 10% of parts in normal supply will be held to fulfill the needs of priority groups. Veterans of World War II should apply to their nearest WAA Office for certification; the actual certificate must be attached to a Veteran's offer to purchase.

All orders are subject to existing priority regulations and to prior sale.

EXPORTERS:

Your business is solicited. Much material which is surplus in the United States is urgently needed or is readily salable in other countries. Watch for offerings which may be of interest to your clients; if prices are established for different trade levels, you are entitled to buy as a wholesaler.

OFFICE OF GENERAL DISPOSAL

WAR ASSETS ADMINISTRATION



Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Denver • Detroit • Grand Prairie, Tex. • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Tulsa



FLEETMAN'S LIBRARY

BATTERY SERVICE MANUAL, a 40-page, illustrated publication covering all phases of storage battery construction and maintenance. This manual, compiled by some of the most capable engineers in the battery industry, has been made available to the truck field through the Association of American Battery Manufacturers, Inc., at a nominal cost of 25 cents per copy. In-

formation outlined in the manual covers battery construction, operation, ratings, new battery installation, charging and servicing. Write AABM at 2706 First-Central Tower, Akron, Ohio.

OPERATION AND MAINTENANCE HANDBOOK, a new edition of the original Operation and Maintenance Handbook, contain-

ing a comprehensive collection of the service bulletins issued by the company pertaining to the operation and maintenance of electrical products. Included are test specifications on all active models of distributors, generators, cranking motors and regulators. Containing over 200 pages, the book, 8½ x 11 in., is being distributed through Delco-Remy's field service organizations, United Motors Service, 3044 W. Grand Blvd., Detroit, Mich., at a list price of \$1.50.

MANAGEMENT AND HUMAN RELATIONS IN INDUSTRY, a 104-page booklet comprised of a series of discussions of employee-management relations by such men as William Seaver, James F. Lincoln, Alton F. Davis, Whiting Williams, Charles P. McCormick, Irving Fisher, H. S. Avery, Charles Ingersoll and many other executives well known in American industry.

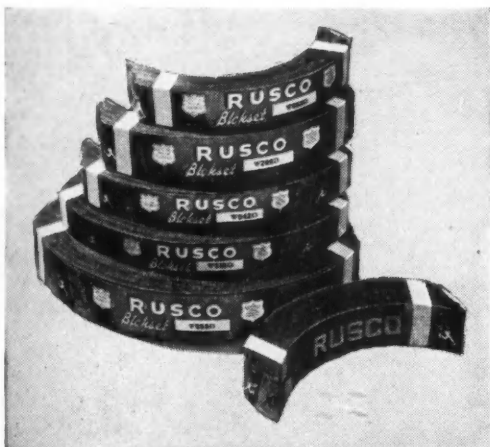
The publication is available from the Industrial Relations Publishing Corp., New York 1, N. Y., 1165 Broadway, at \$2.00 per copy.

MAREMONT LEAF SPRING CATALOG, a 52-page ready reference book listing Maremont springs, helpers, axle U-bolts and merchandising aids. Charts, diagrams and text explain spring removal and installation. In addition, a listing of all interchangeable springs is included. For a copy write Maremont Automotive Products, Inc., South Ashland Ave. at 16th, Chicago 8, Ill.

JOB-RATER FOR TRUCK USERS, a 12-page folder which is the first issue of a new magazine published for those who own, drive, maintain and direct the operation of trucks. The magazine will provide factual and diversified information for truck owners about trucks and their application and will deal with cost-reducing truck operations, economical truck maintenance and efficient service. To get on the mailing list check with L. F. Van Nortwick, director of truck sales of Dodge Div., Chrysler Corp., Detroit 31, Mich.

THE NATIONAL APPRENTICESHIP PROGRAM, a 20-page government-issued publication listing information on the occupations in which apprenticeship training is given. In addition to an explanation of the operation and development of apprenticeship in American industry, this 1947 enlarged edition contains a list of 110 basic trade classifications in which programs are established, the occupations under each classification with the time required for training, as well as procedure for determining apprenticeability of an occupation. Another publication, "APPRENTICESHIP TRAINING ASSURES A RESERVOIR OF SKILLED CRAFTSMEN," provides the answers to many questions arising in training in shops in the metalworking industry. Included in the information is an explanation of the procedures and practices in various plants and localities, the selection of applicants, record-keeping systems, tests, schedules, hours and wages. Copies of these pamphlets may be obtained free of charge from the Apprentice-Training Service, U. S. Dept. of Labor, Washington 25, D. C.

RUSCO BLOKSETS



meet every
requirement

Rusco's Wire-Back BLOKSET is made from a scientifically developed material of exceptional toughness. It is reinforced with a wear-resisting wire back. Each BLOKSET is drilled, countersunk and ground to exact tolerances for peak efficiency. Exhaustive tests have proved that the Rusco BLOKSET is impervious to water absorption and fade, that it possesses truly exceptional frictional qualities. BLOKSETS are built to fit popular passenger cars and trucks. They render maximum performance with minimum wear under severest operational conditions.



"The Standard of the Industry"



Ask your jobber or write to Russell about the great CD Cabinet deal. You get Bloksets, Cabinet and Sales-helps in a single Money-Saving "package!"

THE RUSSELL MANUFACTURING COMPANY
MIDDLETOWN, CONN.

WHEREVER REEFERS ROLL...

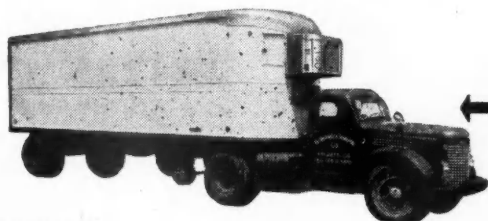
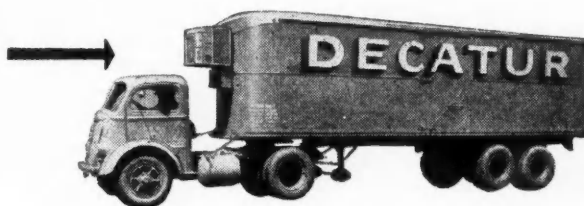
THERMO KING

DELIVERS THE GOODS!

NORTH

"We haven't experienced one minute's delay, or trouble of any kind, and have held the temperature of the loads within two degrees of the loading temperature. The operating and maintenance cost is negligible compared to our former use of dry ice . . . anticipate increasing numbers of satisfied customers."

Decatur Cartage Co., Chicago
D. E. Bramble, Trailer Fleet Supt.



SOUTH

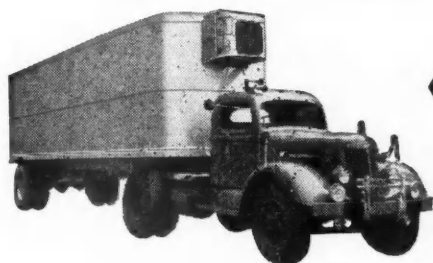
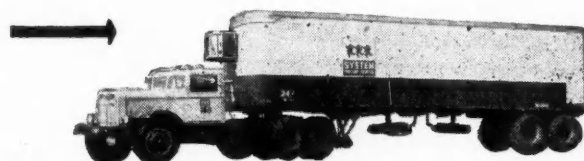
"Principal commodity we handle is fresh dressed and frozen poultry . . . also handle fresh meats, dairy products and packing house products in Georgia, Florida, Carolinas, Alabama and Tennessee . . . everywhere we have sent the trucks with the Thermo King units, our customers have been well pleased."

Refrigerated Transport Co., Atlanta
R. R. Lawhon

WEST

"Truck operates between El Paso and Los Angeles. Running time is 24 hours; distance 810 miles; temperatures encountered between 32° and 120°. Have found Thermo King the finest mechanical refrigerator equipment for transporting meat, dairy products and fish. Other Thermo Kings operated between Los Angeles and Seattle . . . require running time of 44 hours."

System Freight Service, Los Angeles
Wade Sherrard, Vice Pres. & Gen. Mgr.



EAST

"Only unit that has stood up under hard wear. Have carried ice cream from New York to Boston . . . maintained at 7 below zero for 20 hours. Pork loaded at Boston with outside temperature at 85° delivered at 26°, fourteen hours later. Unit is best I have seen or used and recommend it without reservation."

Malkin Motor Freight Co., Cambridge
Edw. J. Malkin, Pres.

"THERMO KING IS OUT IN FRONT"

built by

U. S. THERMO CONTROL CO.

44 SOUTH 12 ST., MINNEAPOLIS 4, MINN.



LARGEST BUILDERS OF MECHANICAL TRUCK REFRIGERATION

MAIL THIS COUPON—NOW!

U. S. THERMO CONTROL CO.

4-A

44 South 12th St., Minneapolis 4, Minn.

Please send complete information about Thermo King mechanical refrigeration for trucks and trailers.

To Attention of . . .

Firm Name . . .

Address . . .

City . . . Zone . . . State . . .

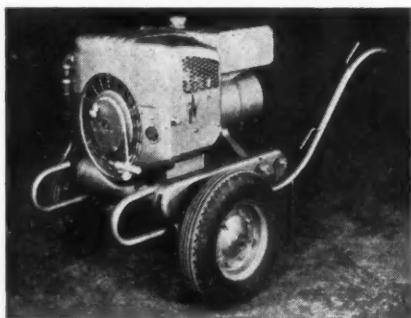
New Products

(CONTINUED FROM PAGE 63)

P310. Portable Welder

A new portable gas-driven "DC" arc welder, weighing a fraction as much as conventional models now on the market, is being mass-produced by the Hollup Corp., a division of National Cylinder Gas Co., Chicago.

Because of its light weight (315 lb.) and compact construction, the "Sureweld" is portable on the job as well as to the job. The welder, which is 32 in. long, 26 in. wide, and stands 28 in. high (without wheels), has undergone extensive field tests.

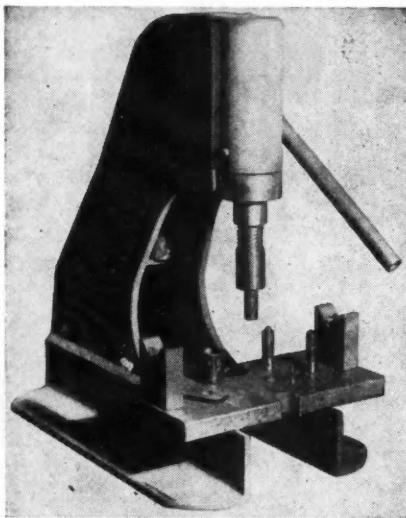


The generator is a four-pole, self-excited type with interpoles. The welder is rated at 150 amperes at 30 volts on 50 per cent duty cycle. It has a four-cycle, two-cylinder, opposed design motor. It has an air-cooled, turbine type fan for cooling purposes.

Use Free Postcard For More Details.

P311. 10-ton Arbor Press

A new portable arbor press has been placed on the market by the Ruger Equipment Co., Inc., Cleveland, Ohio. Weighing 100 lb., the new 10-ton press can be used on a work bench or moved to the work as required.



A 6½-in. stroke of the ram provides ample working range, and the operating lever is adjustable to suit the job. A pressure release valve is conveniently located alongside the pump operating lever.

The press is low priced, simple in design and easy to operate. A table with cut-outs, V-blocks and other attachments are included with the arbor press.

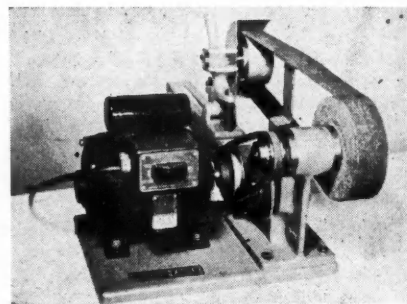
Use Free Postcard For More Details.

P312. Utility Grinder

The abrasive belt has now been applied to the utility grinder by Porter-Cable Machine Co., Syracuse, N. Y.

This new machine provides the advantages of grinding on an abrasive belt operating over a resilient contact roll or wheel in a popular priced unit. Since the wear is on the abrasive belt and not on the supporting contact wheel, this wheel or roll remains flat, square at the corner or side, and maintains its diameter and balance. The resiliency of the roll eliminates chatter.

Grinding on the roll quickly reduces the size of stock being ground. This can be squared up on the platen provided immediately above the roll. Grinding inside of a job is done and held flat by working over the edge of the platen.



For grinding and polishing of certain rounded or oval parts an additional formed resilient contact roll can be attached to the grinder in place of the platen.

Use Free Postcard for More Details.

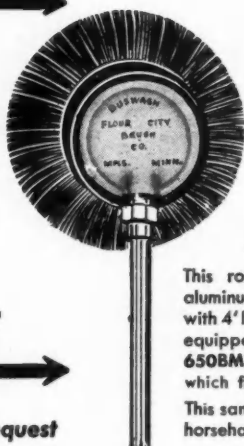
(TURN TO PAGE 254, PLEASE)

IF YOU WANT THE BEST IN FOUNTAIN BRUSHES

Check These Important Points!

- ✓ cast aluminum head
- ✓ imported pig bristles
- ✓ hollow steel handle
- ✓ brass fittings
- ✓ replaceable brush
- ✓ constant flow of water

Our New Catalog Sheet Sent on Request



Bus-Wash

This round type brush has cast aluminum head 5" in diameter, with 4" hollow seamless steel handle equipped with brass fittings. No. 650BM with imported pig bristles which flare to 8". \$12.75

This same brush also furnished with horsehair bristles. No. 650H \$7.95



Fleet-Wash

This is an oblong type brush with a cast aluminum head 2½" wide by 10" long. The imported pig bristles 3¼" long, flare to a 12" cleaning surface. The 4" handle is hollow, seamless steel equipped with brass fittings.

No. 366 \$14.75

If your jobber cannot supply you, write direct giving name of jobber

FLOUR CITY BRUSH CO. MINNEAPOLIS 15, MINNESOTA

PACIFIC COAST BRUSH CO. LOS ANGELES 21, CALIFORNIA

PERFECTION

Is the answer -

WHEN YOU WANT TO HAUL IN A **BIG** WAY

PERFECTION has the Body and Hoist combinations that will give you "full rein" --no matter how ambitious your hauling plans may be.

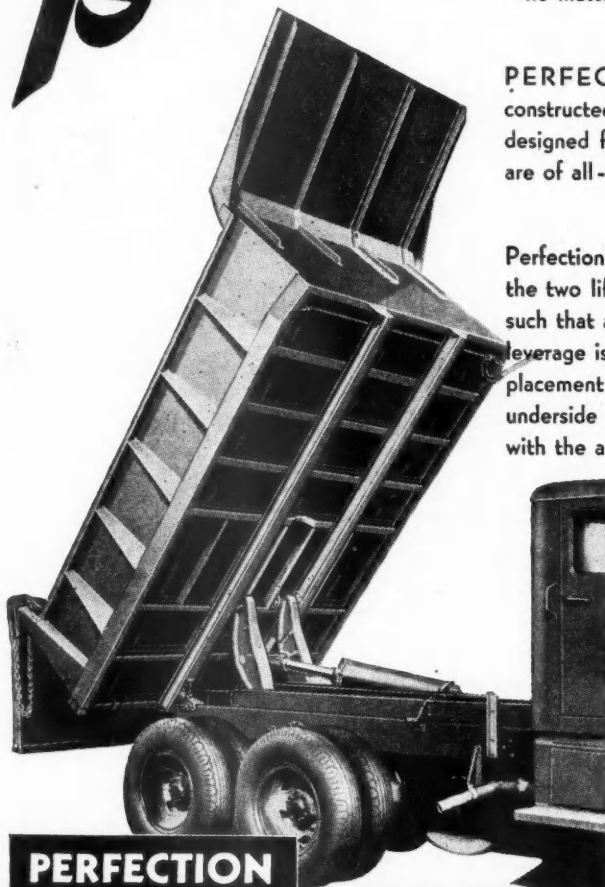
SUPER BODIES

PERFECTION "Series 300" Heavy-Duty Steel Dump Bodies are sturdily constructed of 8 gauge alloy sheet steel for greatest strength. They are especially designed for the most rigorous service--heavily braced at all points of stress--and are of all-welded construction.

SUPER HOISTS

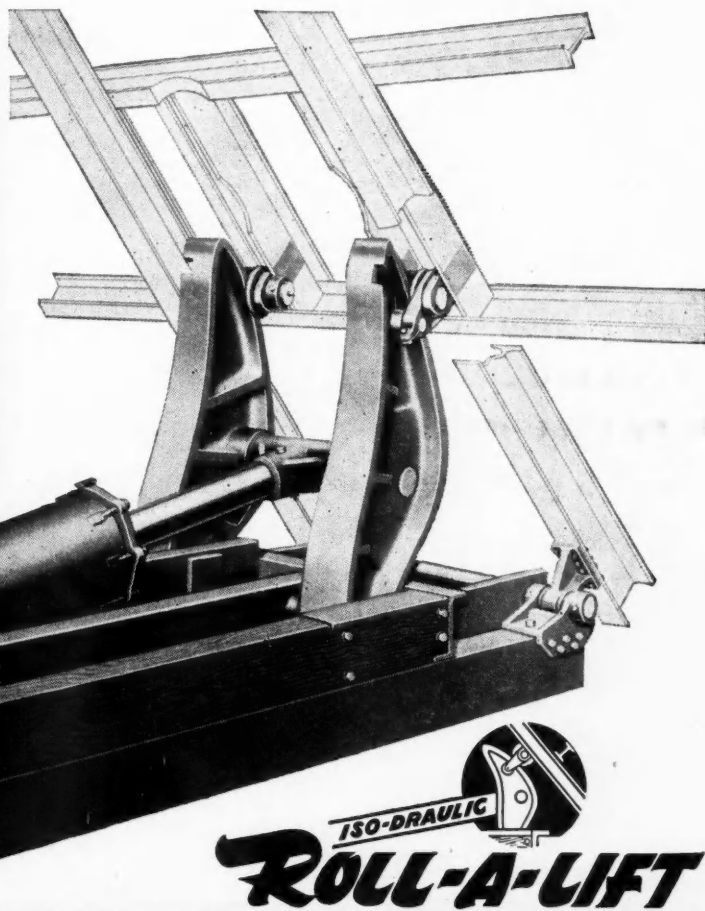
Perfection's remarkably efficient **Iso-Draulic* ROLL-A-LIFT. The upper surfaces of the two lift arms engage two pressure rollers mounted on the body. The design is such that at the beginning of the stroke, where the lift is heaviest, the greatest leverage is provided. The result is tremendous capacity in relation to the piston displacement of this hoist. Two keeper-rollers (patents applied for) travel along the underside of the lift arm flanges, keeping the pressure rollers in constant contact with the arms regardless of body position. Write for complete information.

**Uniform pressure*



**PERFECTION
SERIES 300
HEAVY DUTY
BODIES**

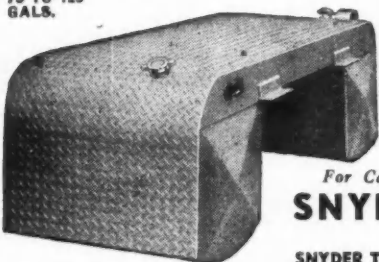
**PERFECTION
NO. 827
HEAVY DUTY
HOIST**



**THE PERFECTION STEEL BODY CO.
GALION, OHIO, U.S.A.**

SNYDER — THE TANK THAT MADE TRUCK OPERATION SAFE & PROFITABLE MAXIMUM FIRE HAZARD PROTECTION — LESS REFUELING, FASTER, LONG SERVICE RUNS

SNYDER SADDLE TANK
CAPACITY
75 TO 125
GALS.



SNYDER SAFETY TANKS

were born when Truck Transportation struggled as an infant industry. SNYDER progressive engineering research continually uncovering exclusive improvements (patents No. 218-1772—2273737 others pending) leads Truck Transportation into BIG BUSINESS, improvements available only in SNYDER SAFETY TANKS . . . U. L. approved.

WHEN YOU BUY A TANK—BUY A SNYDER TANK—
AND YOU BUY THE BEST.

For Catalog and Address of Your Nearest Distributor, Write:

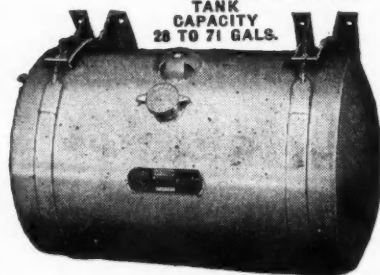
SNYDER TANK CORPORATION

P. O. Box 14, Buffalo 5, N. Y.

SNYDER TANK CORPORATION

P. O. Box 2390, Birmingham, Ala.

SNYDER CYLINDER
TANK
CAPACITY
28 TO 71 GALS.



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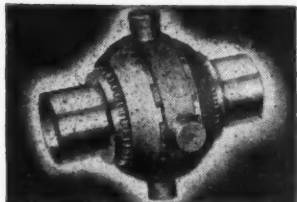
YEARS of toughest service prove Blackhawk Hydraulics superior in safety, rugged dependability and utility. "Service-Proved" Seal found only on Blackhawks. Only complete line of hydraulic hand jacks—models up to 100 tons capacity.

BLACKHAWK MFG. CO.
Dept. J1177, Milwaukee, Wis.



BLACKHAWK

NoSPIN Differential



Provides greater traction, greater driving safety, less tire wear. Easily installed in your truck axle.

DETROIT AUTOMOTIVE PRODUCTS CORP.
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UNITS AVAILABLE

GRICO
2-AXLE DRIVE

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Detroit 19, Michigan

HEIN- WERNER HYDRAULIC JACKS

Made in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity as well as service jacks for shop use and Bumper-Lifts for passenger cars. See your H-W jobber for details.

HEIN-WERNER CORPORATION
WAUKESHA, WISCONSIN

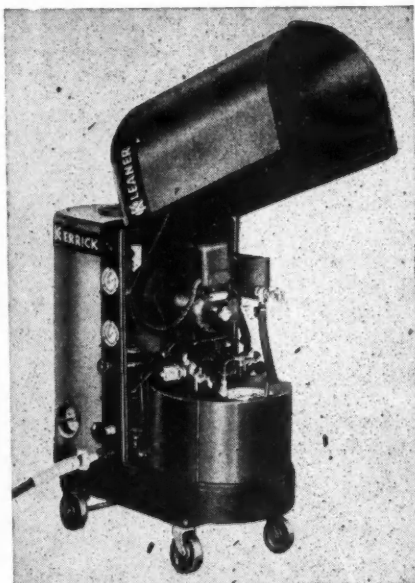


New Products

(CONTINUED FROM PAGE 252)

P313. Steam Cleaner

The new Model C Kerrick Kleaner is being announced by the Clayton Mfg. Co., El Monte, Cal. The Model C includes such features as an automatic soap dispensing unit, pressure atomizing burner, fully insulated fire box and shell, electric ignition, protective fuel cut-off in case of water failure and a simplified, trouble-free positive displacement pump which requires no lubrication.



The unit is fully streamlined, and while small and compactly self-contained in a vapor and dust-proof cabinet, all working parts are easily accessible for adjustment or cleaning by lifting a hinged hood.

Use Free Postcard For More Details.

P314. Tool Marker

A new electric tool marker developed by New Britain Machine Co., New Britain, Conn., cuts initials, names and designs into hard surfaces — quickly, permanently engraves metal, glass, wood or plastic.

It vibrates 7000 strokes per minute, with a knurled, adjusting collar to vary the intensity. This tool, light and carefully balanced for comfortable holding and han-

(TURN TO PAGE 256, PLEASE)

ARMSTRONG

Specialists in Quality
Tires Since 1912

TIRES

THE COMPLETE LINE
that
Completely Satisfies

Since 1906

The
Fitzgerald Mfg. Co.
Torrington, Connecticut



Fitzgerald
GASKETS

KINNEAR Rolling Doors



On truck bodies or buildings, Kinnear Doors are efficient, dependable, economical. Steel-slat curtain coils upward, out of way. Any size; motor operation if desired. Write for details.

THE Kinnear Manufacturing Company
2100-20 Fields Avenue, Columbus 16, Ohio

FOR LOWER OIL COSTS

Cleaner Oil
•
Conserves
Engine Life
•
Cuts Oil
Expense



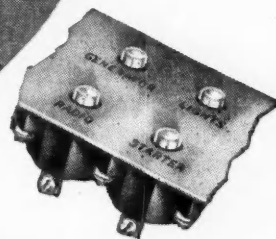
Bulletin
No. 837 Gives
The Facts
•
MICHIANA PRODUCTS CORP.
Michigan City
Indiana

MICHIANA OIL FILTERS

ADVANTAGES

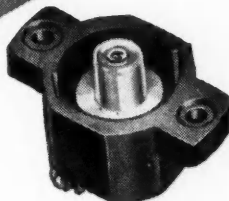
Why KLIXON CIRCUIT BREAKERS are Superior to Fuses

1. Replace fuses and fuse burnouts.
2. Provide Permanent Circuit Protection.
3. Carry full rated current with minimum voltage drop.
4. Do not cause nuisance tripouts.
5. Open circuit should a short or overload occur.



Typical Manual
Reset Circuit
Breaker Panel
Installation

Manual Reset
5 to 40 amps.



Automatic Reset
(weatherproof)
35 to 150 amps.



Used similarly to fuses, Klixon Circuit Breakers overcome the big disadvantage of fuses by providing *permanent* circuit protection. This means they protect circuits for the life of the vehicle without replacements yet provide sure, positive protection.

Should a short or overload occur in a Klixon protected circuit, the Klixon Breaker "opens" the circuit preventing possible damage. When the trouble is remedied or circuit cools to safety, the breaker "closes" the circuit either automatically or by manual reset depending on the type of breaker used.

Permanent Klixon Circuit Breakers will operate repeatedly providing intermittent circuit opera-

tion enabling the vehicle to reach a repair station where the circuit trouble can be remedied.

Easy-to-install Klixon Breakers are unaffected by shock, vibration, motion or altitude. They are available in many sizes and ratings for all circuits in cars, trucks, buses, aircraft and boats. Protect your equipment with Klixon Circuit Breakers. Write for information and samples.

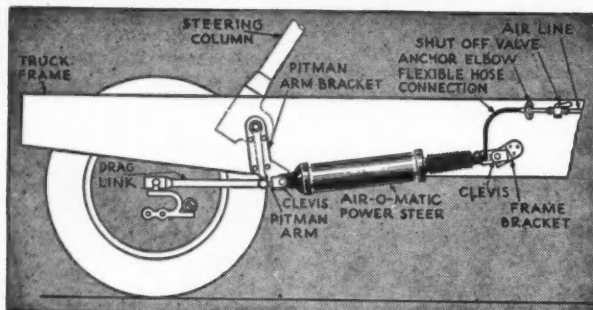
SPENCER THERMOSTAT COMPANY

1607 North Forest Street, Attleboro, Mass.



EASIER STEERING FOR TRUCKS AND BUSES with

AIR-O-MATIC POWER STEER.....



The Air-O-Matic Power Steer is a compact self-contained booster or helper of simple construction, operated by air. It can be readily attached to any truck, bus, motor crane, etc., whether new or old.

Operates automatically, helping only

as the operator of the vehicle leads the steering wheel in either direction. Reduces the pull in steering—lessens strain on driver and steering mechanism.

Details and technical information available on request.

AIR-O-MATIC POWER STEER CO.

2180 Lee Road

Cleveland 18, Ohio

CLIX ENGINE PROTECTION

Pressure Clix

- Signal device for lost oil pressure—lost air pressure in braking system on gasoline and Diesel engines.

Thermo Clix

- Instant alarming device when temperature of the engine reaches the danger point.

Write for descriptive folder today!

THE NASON CO.

7663 Epworth Blvd.

Detroit 4, Mich.

New Products

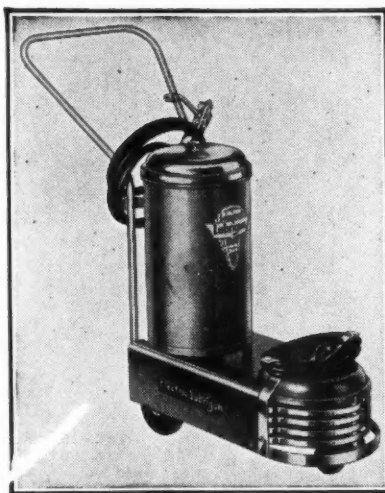
(CONTINUED FROM PAGE 254)

ding, will enable mechanics to identify their tools against loss or "borrowing." The marker, complete with 5-ft. cord and plug, weighs 13 oz., comes in two models for a. c. only. Model TM-115-60 has a special hard alloy point; model TMD-115-60 contains a diamond point.

Use Free Postcard For More Details.

P315. Electric Lubrigun

Model 244 Lincoln Electric-Motor Operated Lubrigun is the newest addition to the lubricating equipment of the Lincoln Engineering Co., St. Louis, Mo. This high pressure grease gun is a streamlined, portable unit equipped with a positive displacement pump, powered by a standard make ¼-h.p. universal motor for 110/115 volts a.c. or d.c.; provides rapid, positive delivery of all types of lubricants which readily seek their own level.



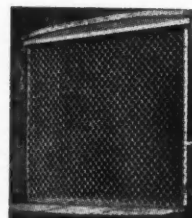
The unit is mounted on two large rubber tire casters and one ball-bearing swivel caster for maximum portability. Full lubricant pressure is instantly available. Capacity of lubricant container is 30 lb. A 7-ft. high-pressure hose assembly with control valve, and a 12-ft. electric plug-in cord are standard equipment on this model.

Use Free Postcard For More Details.

P316. Tube Fittings

Everseal self-flaring fittings, manufactured by Everhot Products Co., Chicago, ATURN TO PAGE 258, PLEASE)

ZEHR COLLAPSIBLE TRUCK BACKS



Safe... easy and simple to handle. Zehr Truck Backs are all-welded steel designed for great strength and long continuous service. They are theft-proof, rust-proof and flexible.

Write for details and prices.

ZEHR PRODUCTS COMPANY

2130 East Hazzard Street, Philadelphia 25, Pa.

• RUGER • Hydraulic FLOOR CRANES

RUGER EQUIPMENT CO., Inc.

408 Leader Bldg. • P. O. Box 3821
Cleveland 14, Ohio • Portland 8, Ore.



SPEAKER TUBE AND TIRE REPAIRS

One Reliable Source for all your needs
Electromatic Vulcanizer • Match Patch Vulcanizer • Match Patches • Electro-Patches • Rubber Rivets • Replacement Valves • Electro-Timer • Casing Patches • Convertible Tire Valves • Valves and Caps • Motorists' Kits • Solvents • Beveled Patches.

J. W. SPEAKER CORP. • Milwaukee 12, Wis.

KEEP YOUR VEHICLES MOVING ECONOMICALLY

with

HALL VALVE SERVICING EQUIPMENT

Ask Your Jobber or write

THE HALL MFG. COMPANY
TOLEDO 7, OHIO



HIGHWAY SAFETY APPLIANCES INC.

1381 MARSHALL AVE.
ST. PAUL 4, MINN.

Available Trucks

1½ TO 20 TONS
TRUCKS • TRACTORS
TRAILERS • BUSES

(SINCE 1910)

TELEPHONE—BRUNSWICK 1100

AVAILABLE TRUCK CO.

2301 ELSTON AVE.—CHICAGO 47, ILL.

Looking for Lower Maintenance Costs?

*see your
United Motors
Distributor*

UNITED MOTORS
ORIGINAL-EQUIPMENT LINES
FOR BETTER PERFORMANCE
AND LONGER LIFE

DELCO-REMY Starting,
Lighting and Ignition

DELCO Batteries

INLITE Brake Lining

NEW DEPARTURE
Ball Bearings

HYATT Roller Bearings

GUIDE Lamps

DELCO Shock Absorbers

AC Fuel Pumps, Gauges
and Speedometers

DELCO Hydraulic Brakes

HARRISON Radiators

HARRISON Heaters

HARRISON Thermostats

DUREX Gasoline Filters

Possibly your United Motors distributor can assist you in the way to better maintenance and lower operating costs per mile. His special services to fleet owners are based on:

1 ORIGINAL-EQUIPMENT PARTS—Your United Motors distributor handles the leading original-equipment parts used on America's most popular trucks, buses and cars. Their established quality means better performance, longer life and lower operating cost per mile.

2 CENTRALIZED SERVICE—Your United Motors distributor is a *single source* for the United Motors lines you need. You save time and trouble when you deal with him.

3 COMPLETE PARTS LINES—Your United Motors distributor supplies parts for *all* models—old as well as new. Twenty United Motors warehouse branches throughout the country insure an even flow of parts at all times—and quickly, too!

To maintain low operating costs per mile and increase maintenance efficiency, see your United Motors distributor and get *all* the facts about the services he offers you.

UNITED MOTORS SERVICE

DIVISION OF
GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING
DETROIT 2, MICHIGAN



"Safety Makes Cents"

AMERICAN SAFETY TANK CO.
KANSAS CITY, MO.

WAUKESHA

Multi-Fuel

ENGINES

**DIESEL OIL
GASOLINE
BUTANE**

ALL LIQUID OR GASEOUS FUELS

GET LONGER,
TROUBLE-FREE PERFORMANCE

with

Pedrick

precisioneered

PISTON RINGS

in guaranteed
ENGINEERED SETS

For every Car, Truck,
Bus and Tractor

Is it *Air* YOU WANT?



—then write for
BULLETIN C-6
illustrating and
describing

**CURTIS AIR COM-
PRESSORS • AUTO
LIFTS • CAR WASHERS**

CURTIS PNEUMATIC MACHINERY DIVISION
of Curtis Manufacturing Company
1970 Kienlen Avenue • St. Louis 20, Missouri

KEEP OIL CLEAN WITH

PUROLATOR

THE OIL FILTER



PUROLATOR PRODUCTS, INC.
Newark 2, N. J.
Founder and leader of the oil filter industry

New Products

(CONTINUED FROM PAGE 256)

are a new development in tube connector fittings.

Leakproof and self-flaring, these brass fittings produce a perfect 37-deg. flare which assures a seat capable of withstanding a pressure of more than 8600 lb. per sq. in. Tests prove that steel tubing will burst while the fitting is still intact.

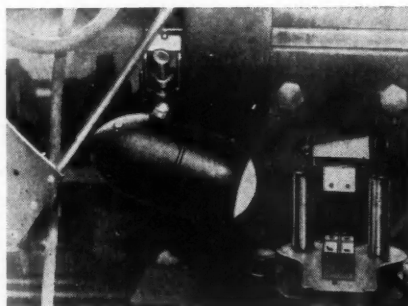
Another advantage is said to be a reduction in the quantity of fittings necessary for dealer or jobber to stock. A stock of ten types of Everseal connectors and one Everseal nut, in the sizes in widest use, will replace many of the stock items which have always cost so much to keep on hand, for suppliers trying to service accounts with the ordinary fitting lines.

Use Free Postcard for More Details.

P317. Shop Spot Light

Designed to produce a high degree of illumination over a small area, a new industrial spotlight developed by Main Electric Co., Inc., Rochester, N. Y., uses a powerful lens to concentrate light where it is needed on the work.

The steel shell housing measures 7 in. over all. It is mounted on a ball and socket unit which permits instant aiming of the beam and positive holding in any direction.



The base support is a steel bar 14 in. long which can be easily attached to any piece of equipment to hold the unit. The lamp has a key type switch, a 7-ft. plastic covered cord and ventilating louvers. It is suggested for use with bench grinders, lathes and machines where fine work is required.

Use Free Postcard for More Details.

(TURN TO PAGE 264, PLEASE)

CRESCENT

Wire Joe

AUTOMOTIVE CABLE

Manufactured by
THE CRESCENT COMPANY, Inc.
Pawtucket, Rhode Island



**✓ CHECK THE WIRE
ON EVERY JOB**

DAYTON Spoke Type Steel

WHEELS

AIR-COOL

BRAKE DRUMS AND TIRES

FOR TRUCKS, TRAILERS AND BUSES.
THE DAYTON STEEL FOUNDRY CO.
DAYTON, OHIO

1917-1947

HIGHWAY TRAILERS

30th
Anniversary

HIGHWAY TRAILER COMPANY
General Offices: Edgerton, Wisconsin
Factories: Edgerton and Stoughton, Wisconsin
Commercial Truck Trailers • Earth Boring Machines
Winches and other Public Utility Equipment

Gatke

CUSTOM-BILT BRAKE LININGS

BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION
228 N. La Salle St., Chicago 1, Ill.

Tire Tools

FOR TIRES AND TUBES

Tire Demounters
Tire and Tool Branders
Tire Spreaders. Tube Vulcanizers
Everything for Tire Service

Write for
FREE CATALOG

KEEL & CO., Inc., Phila. 44, Pa.



KEEL & CO.

Tough Team!

Adaptable and **RUGGED..**

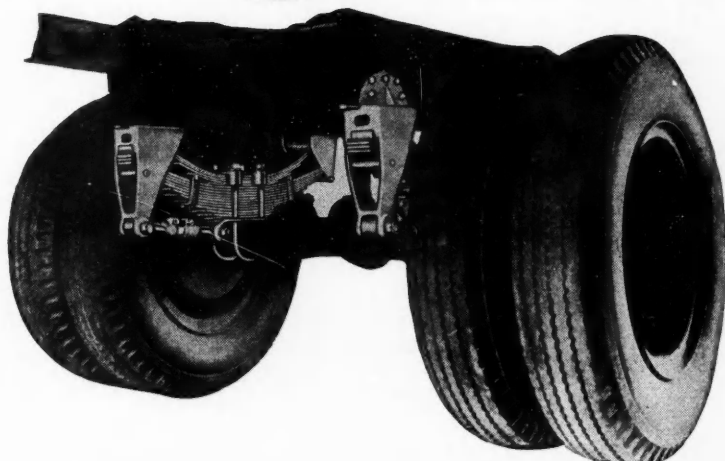


Standard
ROAD-PROVEN AXLES

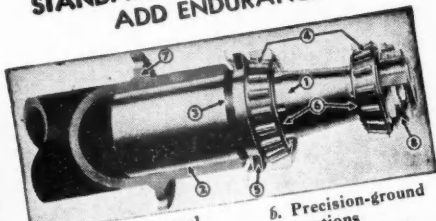
and *SPRING SUSPENSION*

For a really adaptable and rugged axle assembly for your trailer use Standard axles and Standard single axle spring suspensions.

These heat treated tubular axles have unbeatable engineering features contributing to smoother towing, increased tire mileage and greatly reduced maintenance cost.



STANDARD INSERTED SPINDLES ADD ENDURANCE



1. Heat-treated steel
2. Low-stress spindle
3. Safety flanges
4. Heavy-duty bearings
5. Easily replaced retainers
6. Precision-ground sections
7. Extra support flanges
8. Positive-locking nut

Standard's Single Axle Spring Suspension makes light work of axle assembly problems. Engineered for easy adaptability and greater economy, the Spring Suspension serves high- and low-frame trailers with equal efficiency . . . Standard's straight-line spring and radius rod set-up gives easy pulling without rod bending. No parts removed for axle alignment. Spring and helper spring rated capacities ample for maximum load. Spring capacity increases with load increase. Hardened wear plates—easily, economically replaced—prolong the life of the spring hangers. Unique design prevents spring seat cap bending. Be sure of trouble-free assembly or disassembly with Standard's Single Axle Spring Suspension. Wire, write or phone today for complete information on this adaptable, economical product.

Ask Us About Our Free Engineering Consulting Service
EXPORT BRANCH

4900 EUCLID AVE., CLEVELAND, OHIO. C. O. BRANDES, MGR.
PHONE: HENDERSON 0414. CABLE ADDRESS: STANFORAX

MANUFACTURED BY

Standard Forge & Axle Company

INCORPORATED.

MONTGOMERY 2, ALABAMA

AXLES BRAKES FORGINGS TRAILER PARTS

JOYCE LIFTS & JACKS

Single and 2-Post Lifts for all types cars, trucks and buses. New ultra-modern design; simplified installation; level, clear floors; air or electric power. Also Liftmaster Hydraulic Jacks—forged steel construction. Ask for Bulletins.

THE JOYCE-CRIDLAND CO., DAYTON 3, OHIO

Cal-Van
GARAGE TOOLS

GEAR PULLER
2 and 3 RINGER TYPE
CARBON SLAPPER
LUBE AND PULLER
RIGID COMPRESSOR
GREASER
CASTERS
GARAGE TOOLS

* WRITE FOR CATALOG

Cal-Van
MACHINE PRODUCTS
JACKSON, MICHIGAN, U. S. A.

WATER PUMPS

for—BUICK
FORD - DODGE
CHEVROLET - OLDS
HUDSON - PLYMOUTH
PONTIAC - STUDEBAKER

Wohlert
CORPORATION
LANSING - 5 MICHIGAN

THE REPAIRMAN'S FRIEND!

PURITAN
GASKA SEAL

DECALS for FLEET MARKING

Costs less than hand lettering. Does not tie up equipment.
Quantities—50 pieces or more any size.
Can reproduce any art work.

Prompt Delivery
EXCELLO SPECIALTY CO.
4101 East 100 St. Cleveland 5, Ohio

Washington Runaround

(CONTINUED FROM PAGE 84)

Transport Inquiry OKed

The House has adopted HR-153 authorizing the Committee on Interstate and Foreign Commerce to continue the national transportation inquiry begun in 1945 and has also granted the committee an additional \$25,000. A plan of action will be decided before Congress adjourns this month. It appears likely that further study will be made during the summer based on the committee's first report (CCJ, Feb. 1947, p. 48). The study will probably result in the drafting of legislation for introduction at the next session of Congress at which time public hearings will be held.

452,226 War Vehicles Sold

Existing inventories of surplus automotive parts, accessories and assemblies valued at about \$158 million will be disposed of by the end of the year, according to WAA. Under a new procedure, all regional offices have been authorized to offer all parts except engines at bid sales to all groups on an equal basis. WAA states that priority claimants have been given ample opportunity to buy all types of automotive equipment except engines. As to surplus vehicles, WAA expects to liquidate the remaining inventories of about 26,000 units by the end of August. This number is all that remains of about 500,000 that have been declared surplus. As of May 1, a total of 452,226 vehicles had been sold; trucks constituted 67 per cent of all vehicles distributed during the three-year period at the end of May 1. Trailers accounted for nearly 17 per cent; jeeps about 8 per cent; passenger cars less than 5 per cent and motorcycles more than 3 per cent. WAA has realized a return of more than 43 per cent of the original cost of all vehicles sold.

END

(Please resume your reading on P. 86)

Modern Mack Service



Designed to provide complete sales and service facilities, this new steel and concrete block building at Wilkes-Barre has just been opened by the Mack Truck Co. as one of its chain of direct factory branches. Among the many modern features of this building are a service area with only one column, electrically-operated overhead door and overhead trolley for removing engines from chassis to work room. Housed in a separate structure is a central steam plant which provides heat and leaves the main building free of furnace dust and fumes.

FRINK SNO-PLOWS

Both "V" TYPE and
ONE WAY BLADE TYPE
hand or power hydraulic control
FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

CARL H. FRINK, Mfr., CLAYTON, 1000 E. 11th, N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

*Teleoptic

FOG-KING Fog Lights ★ ROAD-KING Driving Lights
★
*REAR-KING Back-up Lights ★ TELE Parking Lights

DIRECTIONAL SIGNALS

The Complete Quality Line. Properly designed for every type of vehicle. Precision-built for Maximum Efficiency and Durability. All Teleoptic products are Fair Traded.

Write for information and prices.

*T.M. Reg. U. S. Pat. Office

The TELEOPTIC Company

1245 Mound Ave. Racine, Wisconsin

WABER "Double Seal" TUBES

CANNOT RIMPINCH SEAL PUNCTURES

In All Sizes Send For Prices

THE WABER COMPANY
1120 S. MICHIGAN AVE., CHICAGO 5, ILL.

ROSSAUL #57

- Prepares steel, galvanneal or aluminum for painting.
- Eliminates solvent cleaning and sanding.
- Deposits phosphate coating, creates excellent bond for surface coating.
- Easy to use—wipe-on, no rinse.

**ROSSAUL COMPANY, 119 West 63rd St.
New York City 23, N. Y.**

MORE THAN STRAINS

Actually Cleanses Oil!

DELUXE

MORE THAN FILTERS Oil Filters

DE LUXE PRODUCTS CORP., LA PORTE, IND.

SPEED WASH FOUNTAIN BRUSH

*Cuts Truck Washing
Time in Half*

As Shown by Actual Operating
Records of Many Fleet Owners



THIS "Speed Wash" fountain brush is the answer to truck washing problems. It soaks, scrubs and rinses in one fast, easy operation. Clean fresh water is constantly fed to the surface from a standard size hose through the 5 ft. handle and eight jets in the 11" back of the brush. Back and handle are of steel. Tufts are of long-lasting, tangle-proof nylon and horsehair mixture. They cannot come out or become loose because they are stitched into the block by hand with rust-proof wire. This brush has been proved on many thousands of trucks, trailers and trains. It is guaranteed to fit your needs. Order today. Include check for postpaid shipment.

Lots of 6 Brushes
(Complete)\$10.95 ea.
Lots of 12 Brushes
(Complete) 10.20 ea.
Lots of 24 Brushes
(Complete) 9.45 ea.

Brush Heads Only . . . \$7.45 ea.

Lots of 6 6.95 ea.
Lots of 12 6.45 ea.
Lots of 24 5.95 ea.

Brush Parts

5 ft. Handle with Socket.... 3.95 ea.
Gasket20 ea.
Rubber Bumper......35 ea.

Prices F.O.B. Milwaukee Unless
Check Accompanies Order

*Mail
Today!*

MILWAUKEE DUSTLESS BRUSH COMPANY

526 North 22nd Street  Milwaukee 3, Wisconsin

Milwaukee Dustless Brush Co. Milwaukee 3, Wisconsin			
Ship following Speed Wash equipment to:			
Name			
Address			
City, State			
Quantity	Item	Unit Price	Total
	No. 240 Speed Wash Brushes		

Mobile Records (CONTINUED FROM PAGE 71)

work is done and the unit is ready to move on. The forms are arranged functionally. They are easy to follow, and once the symbol system is learned, filling in all forms is a simple and easy matter. This is important. The easier the job of record keeping, the better job accomplished.

As to placing responsibility, we feel that this system is near perfect. If the local agent of any terminal or the head mechanic gets a report form he must do something about it. Our records show at a glance what he did, or have his explanation as to why.

The "M" folder, when turned in at the end of the month, shows everything that was done on the unit for the preceding month.

Permalux
FINER DECALCOMANIA

FIRST IN { APPEARANCE
ECONOMY
DURABILITY

Made With DuPont "DULUX"
Write Today for details

THE PERMALUX COMPANY
500 Rathbone Ave. • Aurora, Ill.

SALESMEN
Experienced Fleet Men
DIRECT TO USER SALES
Oil Filter Elements
REFILL FILTER CO.
120 Rhode Island Ave.
East Orange, N. J.

BE SURE
the trademark "Timken" is on every tapered roller bearing you buy. Timken bearings are first choice with truck and trailer manufacturers. Remember—for the best in bearings—

IT'S "TIMKEN"
Trademark Reg. U. S. Pat. Off.
The Timken Roller Bearing Company
Canton 6, Ohio

Painting Costs

IN READING articles in CCJ, I am always particularly interested in paint costs and in tire experience. For this reason I would like to add a few words on our paint program and tell about a tire gage which we have made.

We give all of our units two coats. We use synthetic enamel and a spray. For the smaller straight trucks and pickups, we figure \$13.50 for paint and masking material, and \$20 for labor both masking time and painting. On the smaller trucks we figure \$15 for the sign work on both sides. We have our own sign painter.

On trailers, 28-ft. singles and 32-ft. tandems, we figure paint and masking material, \$17.50. Labor on painting at \$18, and labor for painting the signs on both sides \$22.50. The average total cost on the last 10 trailers to go through our paint shop ran \$57.85.

Tire Mileage

WE FORMERLY averaged better than 60,000 miles on pre-war tires before recapping. During 1945 and 1946 we averaged 40,000 miles before recapping or discarding. During 1946, 70 per cent of our tires were given one recap.

Approximately 15 per cent of our tires receive a second recap, very few of them a third recapping. On the last 100 tires recapped, we show a recap mileage of 27,191 miles.

Picking the 10 high mileage tires and the 10 low mileage ones from the last 100 tires discarded, we show 36,620 as the low mileage average, and for the top ten, an average of 56,189 miles.

Tire Matching Gage

WE HAVE developed a tire matching gage which allows us to match tires with very little effort and time. This gage is made from 30-in. channel iron, 1 1/4-in. wide, with a 4-in. arm welded onto one end at a 28 deg. angle. On the bar another arm of the same length and at the same angle is mounted to a slide collar and fastened at the top with a set screw. This sliding arm has a 1/2-in. metal brace.

END

(Please resume your reading on P. 72)

AUTOPULSE ELECTRIC FUEL PUMP



- Used in any car or truck
- No vapor lock
- Instant starting
- No stalling in traffic
- Greater fuel economy
- Added protection

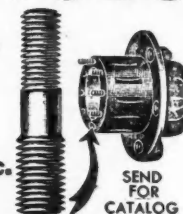
AUTOPULSE CORP., LUDINGTON, MICH.

OVERSIZE AND STANDARD REAR WHEEL STUDS

for all Trucks
ORDER FROM YOUR JOBBER



CHAMP-ITEMS, Inc.
6191 Maple Ave.
St. Louis 14, Mo.



SEND FOR CATALOG

When the Motor is Down
Build it Up with...

Allied
MOTOR PARTS

ALLIED MOTOR PARTS CO
DETROIT 1, MICHIGAN

MICRO-LINOR
The
PRACTICAL
LOW-PRICED LINE OF
WHEEL ALIGNMENT
INSTRUMENTS

Micro-Linor Service Corporation
1629 West Fort St., Detroit 16, Mich.

INVESTIGATE
Quixign Lettering
Method Now!

Your fleet can be rolling billboards... Have enough EYE APPEAL to advertise, sell and deliver your products or service daily wherever they go.

Use... Quixign Plain or Adhesive Coated Stencil Paper. Quixign Ready-to-apply Masked Stencils. Quixign Quality Enamels or Lacquers.

A complete detailed folder has been prepared, giving step-by-step instructions. Write today for full particulars.

ASHLEY QUIXIGN COMPANY
15330 Idaho Ave. Detroit 3, Mich.

The missing SAFETY FACTOR

— FIRE FILE — CASE No. 10998

LOCATION: Hotel
CAUSE: Canvas awning ignited by a lighted cigarette tossed from window
DAMAGE: Estimated at \$15,000.00

SURE

MAYBE YOU DON'T USE AWNINGS BUT...

a similar report might be written about you nevertheless. It might have been a truck "tarp", a welding curtain, protective covering over inflammable materials, or a boat cover instead of an awning. It might have been a spark from a welder's electrode or a burner's torch instead of a cigarette. In any case, the missing safety factor is *flameproof fabric*.

FLAMEPROOF FLAMEFOIL CANVAS REDUCES FIRE HAZARDS . . .

Impregnated by a patented* finish, the flameproof protection of FLAMEFOIL Canvas will not wear off nor wash out, lasts as long as the fabric itself. When you use and specify Flameproof FLAMEFOIL Canvas your equipment lasts longer, resists wear, and requires fewer replacements. The reason is . . .

FLAMEFOIL'S 4 POINT PROTECTION



FIRE
PROOFING



MILDEW
PROOFING



WATER
RESISTANCE



WEATHER
RESISTANCE

INVESTIGATE THE ADVANTAGES OF THESE OTHER FLAMEFOIL PRODUCTS

FLAMEFOIL BEAUVAN—Simulated leathers in beautiful colors and grains. A truly great product for upholstery, seat covers, decorations, table tops in bars, lounges, restaurants and other public rooms where fire hazards are always problems.

FLAMEFOIL FABRIX—Flameproof, light weight fabrics that combine safety with unusually wide range of use. FLAMEFOIL Fabrix is great for mattress ticking, an effective answer to the "bed smoker" problem.



*Manufactured under Pats.
No. 2,299,612 and 2,044,176.
Others Pending.

**FLAMECOTE Canvas
Finish—FLAMEPROOFS
ORDINARY CANVAS**
Easily applied FLAMECOTE Canvas
Finish makes ordinary canvas flame-
proof, resistant to water, weather,
color and white, it makes drab,
looking canvas bright and new.
In one quart, one- and five-gallon
containers.

**FLAMEFOIL
PRODUCTS**

PHILADELPHIA TEXTILE FINISHERS, Inc.
NORRISTOWN, PENNA.

W. L. BARRELL CO., NEW YORK
Sales Agents for FLAMEFOIL Canvas

STOP "Roll-Off" Danger and Damage!

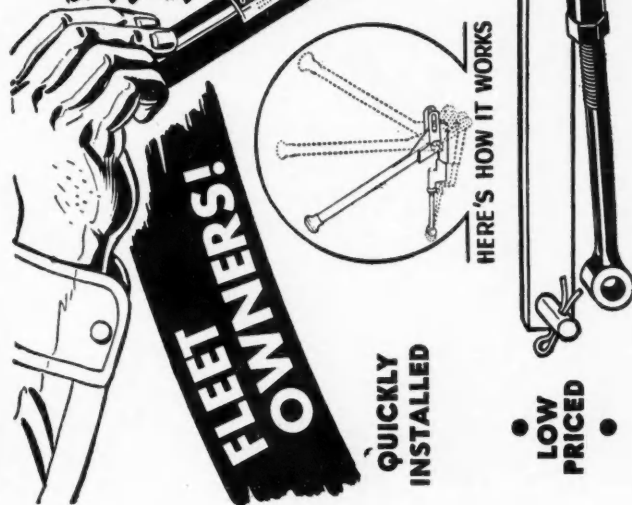
Equip Your TRUCKS, BUSES, TRACTORS with the

Orscheln BRAKE LEVER

You can't afford to be without this positive protection against "roll-offs" of your vehicles when parked. Costs little to install and may save you thousands in damages. The Orscheln Brake Lever is tried-and-proved . . . many fleet owners have used it for years. Can't jar loose . . . the heavier the strain, the tighter it holds. It hooks right up to practically any emergency brake mechanisms already in vehicles. Quickly installed.



Instant Finger-
Tip Adjustment
of
Emergency
Brakes



FLEET OWNERS!

**QUICKLY
INSTALLED**

HERE'S HOW IT WORKS

**LOW
PRICED**

The Orscheln Brake Lever works on the over-center principle . . . pressure applied in setting brake is multiplied many times. A twist of the knob on the brake handle adjusts brakes as they loosen through wear. Sturdily built of finest materials to give years of satisfactory service and safety. **WRITE OR WIRE**—or see your local garage man. Investigate how little it costs to add this valuable safety feature to your vehicles.

THE ALKEN COMPANY 402 W. REED STREET, MOBERLY, MISSOURI

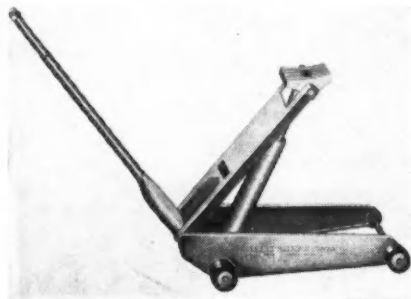
New Products

(CONTINUED FROM PAGE 258)

P318. Hydraulic Jack

A lightweight hydraulic jack of new design has just been announced by Lee Engineering Co., Pawtucket, R. I. The unit, known as the "Auto-Lift" Jack, is of heat-treated aluminum and steel and only weighs about 65 lb. Because of its light weight and compactness, it is easily handled and can be conveniently carried in a service car or in the trunk of a car. It is also readily moved about and used in garages, service stations and shops where a jack of this type is required. Wheels are steel, 3 in. diameter, 1 1/4 in. wide. Chassis is 24 in. long.

The hydraulic cylinder is quick-acting and has a 3000 lb. capacity. The "Auto-Lift" can be lowered as slowly or as fast



as desired and can be stopped at any point on the way down. This action is controlled by the telescopic handle which is adjustable in length and can be removed from the base if desired. The lifting range of the new jack is from 4 1/2 to 22 in.

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P319. Wheel Block

A safety wheel blocking device which prevents autos or trucks from rolling or slipping off jacks of all kinds, while the vehicle is in a jacked up position and being worked on has been developed by Modern Devices, Inc., Chicago.

"Saf-T-Blox" is an engineered wheel blocking device consisting of two perfectly pitched wooden wedges, riding on a collapsible metal folding frame. When in use, frame extends to 24 in., folded over-all is 12 in. when stored in the trunk of a car.

Use Free Postcard for More Details.

P320. Floor Marker

Known as the Pen-Kote System, a new method for marking service floors with guide lines and space markers is announced by Peninsular Chemical Products Co., Van Dyke, Mich. Application can be made over the week-end to service floors of all types, and results in a lustrous sheet of solid Saran plastic permanently bonded to the floor.

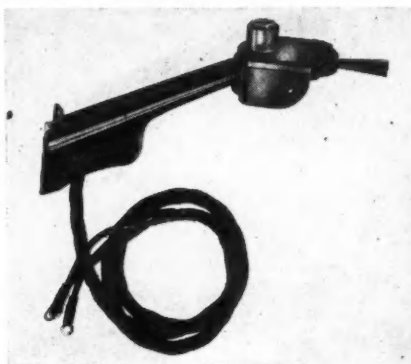
Although it is a liquid plastic, Pen-Kote is applied with a brush the same as paint, and dries so rapidly that it would not be damaged if driven on one hour after application. Colors available include red, tan, dark blue, gray, black and white.

Use Free Postcard for More Details.

P321. Signal Switch

A new directional-signal switch—Model N-250 series—has been developed by the Arrow Safety Device Co., Mount Holly, N. J. The makers claim that it will give long trouble-free operation, since it far exceeds S.A.E. requirements, which call for 175,000 on-and-off cycles.

A flick of the finger moves the switch from one position to the other. Other improvements include the elimination of a



troublesome relay and the new streamlined, die-cast body which adds greatly to the appearance and strength of the switch. It is available in black enamel finish.

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P322. Steam Cleaner Gun

All Tivit Steam Guns are now equipped with a new patented "Aerated" gun grip, said to be cool, safe, and easy to handle.

This device is constructed of perforated material which permits free circulation of

Underbody Coating



The newly developed DeVilbiss Underbody Coating Equipment, Type QBD, which pumps material from the original 55-gal. container, eliminating extra handling and speeding the work. Equipment includes the MBC spray gun and high quality solvent-resistant hose, designed for heavy, underbody application

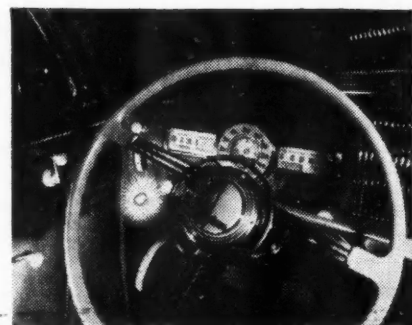
air around the steam pipe. Further coolness is built in by the use of phenolic discs to insulate the grip from the pipe. The elimination of the rubber covering in use for many years has made possible the reduction in the size of the grip. Now it can be held comfortably in the average hand without the usual tiring effects.

Use Free Postcard for More Details.

P323. Brake Signal Light

A new type of signal light, designed to warn the driver when he starts without releasing the emergency brake, has been placed on the market by the Elkind Tool & Mfg. Co., Chicago, Ill.

Serving also as a handy light by which the driver can read notes and road maps, the lamp is mounted on the dashboard and connected to the emergency brake. The moment the ignition is turned on, the lamp



flashes red to show that the emergency brake is on. There is said to be no excessive drain on the battery because the warning light goes off when the ignition is turned off.

Use of the lamp is said to cut down repair bills caused when drivers forget to release the emergency brake until the smell of dragging brakes warns them too late.

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P324. Rust Preventive

A new rust preventive that dries to a firm, high melting point film, capable of protecting metal equipment in outdoor storage for as long as two years, is being made available by the U. B. Bray Co., Los Angeles.

Brayco 100, as the hard drying rust preventive is designated, is designed to meet extreme conditions of humidity, heat, weathering and cold.

The product can be diluted with solvent and sprayed on, or applied by brush. Brayco 100 is used for painting the under surfaces of automobiles and trucks, particularly fenders.

Use Free Postcard for More Details.

P325. Hammer Tips

Replaceable hammer tips of three grades of hardness are among the outstanding features of a new series of Nupla Hammers that make them especially adaptable for all-purpose auto construction and repair work, according to the manufacturer, the New Plastic Corp., Los Angeles, Cal.

Use Free Postcard for More Details.

END

(Please resume your reading on P. 64)